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The Meliolineae. I.

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(With Plates I—II.)

The antiquity of the *Meliola* group, the great constancy of certain characters, as of the spores; the large variation of other characters, as of the setae and hyphopodia; its apparently highly developed biologic specialization and withal its widespread geographic distribution in the warmer countries make the morphologic and taxonomic study of this group of unusual interest.

All of the species are parasitic, most of them causing but small injury to the hosts, but interesting gradations to forms that do produce large disease spots occur.

The occurrence of morphologically identical forms on related hosts in the most widely separated parts of the world, as in South Africa, India, Australia, Central and South America, is frequent. The occurrence of groups of related but slightly divergent species on members of many host families indicates a biologic isolation quite comparable, in its relation to evolution, to that of geographic isolation.

That the numerous parasites of the Meliolas (260a) are as widely distributed as their hosts, and that the associations are usually between the same species, bespeaks the long existence of this relation.

It is probably more than a coincidence that heavily parasitized species are more frequently associated with disease spots than are species not so parasitized; indicating a symbiotic attack that is not common in plant pathology.

Excessive parasitism on the *Meliola* colonies usually suppresses perithecial formation, often also the formation of setae, thus rendering identification of such parasitized specimens impossible unless there is some very distinctive character of mycelium, hyphopodia, or colony.

Much confusion in morphology and taxonomy has resulted from failure to discriminate between the *Meliola* and its numerous parasites. Thus pycnidia and conidiophores and even the perithecia of the parasites on the *Meliola* have been repeatedly described as organs of the *Meliola*. Such error has been most frequently the ascription of the role of a conidial

stage to *Helminthosporium* (*Sporhelminthium* Speg.) or *Arthrobotryum*. This error occurs throughout Gaillard's monograph and in other early descriptions and in quite a number of recent descriptions. It is a pernicious, troublesome error since it led to ascribing differences where no differences existed and to the confounding of mycelial setae with conidiophores in descriptions, a matter that is now of much importance. Spegazzini in his earlier works, e. g. Fung. Guar. 1883, apparently uses the term "hyphis conidiiferis" to indicate mycelial setae, as well as conidiophores. Arnaud clearly called attention to such errors in 1918 as I did also in 1916.

The genus *Meliola* was established in 1825 by Fries. A comprehensive discussion of the genus with its then known six species was given with excellent figures in 1851 by Bornet. Gaillard's "Le Genre Meliola", a book of more than 160 pages, in 1892, recognized 111 species, with nearly thirty names excluded or dubious and several others as synonyms. In 1920 Beeli listed 459 specific names in the then recognized two genera, and introduced the exceedingly helpful scheme of group numbers.

The *Meliolineae* now comprise close to 1000 species. They have ever been attractive forms, usually conspicuous, and have been largely collected, leading to a voluminous literature, numbering in the present bibliography more than 350 titles.

The value to be attached to various characters for taxonomic purposes is problematic. The ascospores are remarkably uniform in a given species and even in groups of species. Thus, on many families are groups of closely related species differing in minor characters yet all agreeing in spore characters; the spores in all being of the same septation and approximate size and shape. Perhaps in no other natural group of fungi showing such geographic and host range and such diversity in other characters is there such constancy in spore character. Spores other than 4- or 5-celled almost never occur. Spore septation is almost absolute in constancy, perhaps the only exceptions being *M. stuhlmanniana* in which the spores are said to be 3 to 4-septate and *M. peltata* in which they are said to be 2 to 3-septate. Moreover, color and general aspect are very uniform. Only in very rare instances, as for example in *M. psidii*, does a distinctive form occur and here it is found in the conic spore ends. It is noteworthy that *M. psidii* from most diverse sources, Costa Rica, Surinam, Equador, Porto Rico and Brazil, shows this character constantly.

Parasitism is a valuable and significant character that has been much neglected in descriptive works though as early as 1852 Bornet noted the ability of these fungi to cause disease. In fact most species, merely sending haustoria into the epidermis, cause no visible ill effect upon the host, but on the other hand some, as for example *M. morbosa* and *M. parasitica*, cause large diseased spots on leaves. All stages between these two extremes occur.

The color of the individual threads of the mycelium is often of great significance; sometimes, as with *M. clavulata*, the mycelium is translucent

and yellow, in other species it is dark. Thickness of the mycelial thread appears to be quite constant in a given species, but differs in different species. The mycelium, also, frequently shows distinctive character in its branching and in contour, as straight, sinuous.

The influence of the host upon the morphology of the parasite shows chiefly upon the mycelium. For example, in the case of *M. panici* the mycelial strands that run longitudinally, with the veins, are quite straight; while the transverse mycelium is crooked, likeunto the easy direct road of the valley in contrast with the winding angular turns of the mountain highway. Similar effect of the substratum is frequently seen. Thus, a given species, hypophyllous among many trichomes, shows a mycelium that is crooked; while the same species epiphyllous in the absence of obstructing trichomes presents a comparatively straight mycelium. When such differences, due to host contour, are known to occur it is obvious that variation for similar cause is to be expected in a given species if it grows upon two hosts of different degrees of roughness. *M. mandevillea* affords an excellent example of the effect of position on morphology, the longer setae hypophyllous giving a different formula for these than for the epiphyllous colonies.

Colony habit is certainly of significance; whether crustose, arachnoid, large, small, etc. and serves to separate certain species clearly. The capitate hyphopodia, in position, shape, size and length of stalk-cell are very significant. Usually there is constancy in these characters, but in some instances their very variability is characteristic. Recently Spegazzini used the term "antrorse" regarding the capitate hyphopodia in useful characterization. The mycelial setae and perithecial appendages and setae, next to the spores, are significant, both as to their character and length and branching.

The mucronate hyphopodia though usually described in specific diagnosis, and occasionally cited as of distinctive character are of very little value in delimiting species since they are so remarkably uniform in shape and size. That this uniformity obtains in such a large number of species, however, renders them of great importance in the group.

The hypothecial disk was first mentioned by Bornet in 1851 under the term "receptaculum" but its significance in taxonomy was first brought out by Spegazzini.

Explanatory.

The numbers given following the headings "Distribution" and "Citations" refer to the bibliography which will appear in a later article in Annales Mycologici. A bibliographic citation followed by an asterisk (*) indicates that the article illustrates the species in question. Under the heading "Citations" repetitions are not made of articles previously cited for the same species, nor are such general works as the Sylloge Fungorum, Beeli's

monograph or that of Gaillard cited unless for some special reason; as for example to refer to illustration.

I am especially fortunate in possessing, or in having had the loan of many types, especially those of Sydow, Spegazzini, Beeli, Doidge as well as many of the older types of Gaillard, Patouillard and Berkeley, given or loaned to me through the courtesy of the Museum D'Histoire Naturelle at Paris and of the Royal Botanic Gardens at Kew(1).

Whenever reference is made to the type specimen, it is to be understood as meaning part of the type bearing the original label or labeled "type" by the person or institution that kindly furnished it.

In the citation of specimens I mention only those that I have examined and have also omitted reference to my own collections in Porto Rico, Hawaii, Costa Rica, Panama, British Guiana, Trinidad, Peru, and Equador.

The distribution and hosts are given on the authority of the authors cited in these connections. A complete host index will be supplied with the concluding article.

The Beeli formulae are used in this article with definitions differing slightly from those of Beeli, Spegazzini and others and from my earlier articles. These changes have been introduced in the interest of accuracy and lead to slight modifications of some of the formulae hitherto presented. The usage in the present article is as follows:

I. Main characters (numbers at left of period):

(1) Spores

1 . . 2-septate
2 . . 3-septate
3 . . 4-septate
4 . . 5-septate.

(2) Perithecia

1 . . With no setae or vermiform appendages
2 . . Bearing thick, cutinized, vermiform appendages
3 . . Bearing uncinate or spiraled setae
4 . . Bearing setae, not uncinate or spiraled.

(3) Mycelial or discal setae

0 . . Absent
1 . . Simple, entire, straight or nearly so; not uncinate
2 . . Simple, entire, but uncinate
3 . . Dentate, notched or forked a short distance (teeth less than 40 μ long)
4 . . Branches subdivided or of over 40 μ in length.

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(1) I desire especially to acknowledge my indebtedness to Dr. H. Sydow not only for the very numerous specimens he has loaned or secured for me but also for making many comparisons of specimens and expressing to me the conclusions of his critical judgment.

(4) Capitate hyphopodia

1 . . Alternate or unilateral
2 . . Opposite
3 . . Both alternate and opposite.

II. Measurements (numbers on right of period):

(5) Spore length

1 . . 20 μ long, or less
2 . . 30 μ long, or less
3 . . 40 μ long, or less
4 . . 50 μ long, or less
5 . . 60 μ long, or less
6 . . over 60 μ long.

(6) Spore breadth

1 . . 10 μ or less
2 . . 20 μ or less
3 . . 30 μ or less
4 . . more than 30 μ.

(7) Perithecium (diameter)

1 . . 100 μ or less
2 . . 200 μ or less
3 . . 300 μ or less
4 . . over 300 μ.

(8) Mycelial setae (length)

0 . . absent
1 . . 300 μ or less
2 . . 500 μ or less
3 . . 1000 μ or less
4 . . more than 1000 μ.

For a species with a variable character, e. g. setae simple or dentate, the fractional form is used, as 1/3. In the case of the second digit "1" indicates the absence of setae and larviform appendages, but the perithecium may be roughened by rounded or conic prominences. The only difficulty in application of this digit is in the few cases where the conic prominences approach the character of vermiform.

Sometimes the question of the basal perithecial setae presents difficulty. Basal setae are often described, or setae "grouped around the perithecium." Unless there is absolute evidence in the description, as for example such expression as "setae from the lower third of the perithecium", or evidence from examination of actual specimens, that the setae do arise from the perithecium, not from the hypothecial disk, I regard them as from the disk or subiculum and class them as mycelial setae, not as perithecial setae. Since on this distinction hinges the generic status, it is probable that further study of actual specimens may lead to a transfer from one genus to the other in some cases. In the use of the four digits showing size

I have recognized the greatest size given, not the average. Thus, for a spore 22—31 μ the fifth digit becomes 3; for setae 90—305 μ the last digit becomes 2. Measurements less than the maximum for perithecial diameter are of little or no significance since undersized perithecia may really be only undeveloped.

A method of examination that has been found to be very helpful with colonies so strongly adherent that they could not be removed by the usual celloidin method (262) is to boil the leaf for a few moments in dilute potash, wash and dry under pressure between filter papers, then mount by the usual celloidin method.

Another useful procedure is to place the host leaf in dilute acid with a few crystals of potassium chlorate, leave overnight, then dry and mount with celloidin as above described. This treatment bleaches all parts to a considerable extent and thus makes study of the morphology more definite.

In the keys and group numbers those characters are indicated that were found to be most common on examination of type material or other specimens presumably reliable or were designated in the original description. Variation from these, of course, occurs but could not be provided for in the keys or formulae.

Varying conception of the significance of the group number, differences in observation or in material, perhaps representing actual variation in the fungus, has given rise to various characterization for supposedly the same species as is shown by the following example:

M. malacotricha 3113. 3231 Doidge
3112. 3231 Gaillard
3112. 3222 Spegazzini
3113. 3221 Beeli.

Abbreviations used in the keys are: s. = setae, ch. = capitate hyphopodia, hc. = head cell, col. = colony, peri. = perithecium, app. = appendages br. = branch, myc. = mycelium.

Taxonomic.

When two or more species that show very marked resemblances, appearing to indicate close genetic relationship, are described on members of the same host, I recognize only one as of specific rank and reduce the others to varieties. Similar procedure is followed even though the species are not on members of the same host family when the evidence of relationship seems to be beyond question. Such relationship is sometimes indicated by one set of characters, sometimes by others. Thus in the Meliolas on the Convolvulaceae it is in the pale mycelium and the shape of the hyphopodia; on the Bignoniaceae it is in the setal tips. *M. bicornis* with its numerous variations shows relationship in both mycelium and setae.

Since the group of more than forty species devoid of mycelial setae but possessing true setae, not vermiform in character, upon the perithecium is well defined I erect for it the new genus *Irenopsis*.

Irenopsis n. gen.

Characters of Irene except that true setae not vermiform appendages are borne on the perithecium; characters of Meliola except that mycelial setae are absent and perithecial setae are present; type of the genus *Meliola tortuosa* Winter which becomes *Irenopsis tortuosa* (Winter) n. comb.

It appears desirable and proper to distinguish as separate genera the non-setose Meliolas that bear larviform perithecial appendages as was suggested by v. Höhnel, but since the genus *Irene* was originally described as a Meliola without setae and the type designated was *M. inermis*, which has larviform appendages, the forms with larviform appendages must bear the name *Irene*, not *Appendiculella* as proposed by v. Höhnel.

For those forms that have no mycelial setae, no perithecial setae and no larviform appendages I propose the new genus **Irenina** with *M. glabra* Berkeley and Curtis as the type, which becomes *Irenina glabra* (Berkeley & Curtis) n. comb. The species described as having 8-spored asci I leave for later consideration.

The genera of the *Meliolineae* may be distinguished by the following key:

Key to Genera of the Meliolineae.

Perithecium typically dimidiate at maturity
- No free mycelium . . . . . *Actinodothis* No. 1, p. 411.
- Free mycelium present . . . . . *Amazonia* No. 2, p. 412.

Perithecia globose, not dimidiate, at maturity
- Mycelium devoid (or nearly so) of typical capitate hyphopodia . . . . . *Meliolina* No. 3, p. 415.
- Mycelium with typical capitate hyphopodia
  - Mycelium devoid of setae
    - Perithecium bearing larviform appendages . *Irene* No. 4, p. 420.
    - Perithecium with no larviform appendages but with true setae . . . . . *Irenopsis* No. 5, p. 429.
    - Perithecium with no setae or larviform appendages . . . . . *Irenina* No. 6, p. 442.
  - Mycelium with setae . . . . . *Meliola* No. 7 (1).

Genus No. 1. **Actinodothis** Sydow, H. & P., Philippine Jour. Sci. C. Bot. **9**: 174. 1914.

Stromata superficial, circular, radiate, several layers thick; loculi 1 to several, separate; attachments to the substratum several. Hypostroma tenuous, asci aparaphysate, 2-spored. Spores dark, 3—4-septate.

Type species *A. piperis*, on Piper.

This genus is by Theißen and Sydow (325) placed in the *Dothideales*, but its relationship to the Meliolas is clearly evidenced in its spore character and mycelium. The complexity of the stroma and the paucity of hyphopodia mark is as quite distinct from *Amazonia*.

(1) To be treated in a later article in this journal.

Key to the species of Actinodothis.

Spores 3-septate
2101. 4240, on Celastraceae . . . . . *perrottetiae* No. 1.
Spores 3—4-septate
2/3101. 3230, on Piperaceae . . . . . *piperis* No. 2.
Spores 4-septate
3100. 6340, crustose, on Myrsinaceae . . . . . *suttoniae* No. 3.

No. 1. **Actinodothis perrottetiae** Stevens, Bish. Mus. Bul. **19**: 51. 1925.
On Celastraceae: Perrottetia.
Type locality: Oahu, Hawaiian Islands, Stevens *717*.
Citation: 264*.

No. 2. **Actinodothis piperis** Sydow H. & P., Philippine Jour. Sci. C. Bot. **9**: 175. 1914.
On Piperaceae: Piper.
Type locality: Palawan, Philippines, Merrill *8819*.
Specimen: Phil. Bur. Sci. *23925*.
Citations: 325, 297*.

No. 3. **Actinodothis suttoniae** Stevens, Bish. Mus. Bul. **19**: 51. 1926.
On Myrsinaceae: Suttonia.
Type locality: Oahu, Hawaiian Islands, Stevens *143*.
Citations: 264*.

Genus No. 2. **Amazonia** Theißen, Annal. Mycol. **11**: 499. 1913.
Meliolaster Doidge, Tran. Roy. Soc. So. Africa **8**: 123. 1920 (not *Meliolaster* v. Höhnel).

The original description of *Amazonia* places the genus as a section of the *Microthyriaceae* and characterizes it as with hyphopodiate mycelium, asci aparaphysate, basal, 2-spored; spores brown, several septate.

The characterization by Theißen is as follows:

Mycelium superficial, hyphopodiate, Meliola-like. Perithecium radial, shield-formed, circular, inverse. Asci clavate, aparaphysate, 2-spored; spores 5-celled.

The type species is *Meliola asterinoides* Winter var. *psychotriae* P. Henn. = *M. asterinoides* Winter. Höhnel has shown (113) that in this genus under the shield like cover a completely closed perithecium exists, pale and thin-walled, and properly regards this as a transition genus between *Meliola* and the *Microthyriaceae*.

Conspectus of Amazonia.

No setae present
Spores 3-septate
2101. 4220, hc. several-lobed, on Celastraceae . *perrottetiae* No. 1.
Spores 4-septate
ch. alternate or opposite
3103. 4220, hc. oval to cylindric, often angular, not crowded, on Anacardiaceae . *anacardiacearum* No. 2.

ch. opposite
3102. 3220, hc. sub-globose, densely crowded, on Euphorbiaceae . . . . . *acalyphae* No. 3.
ch. alternate
3101. 5340, hc. cylindric or clavate, on Lauraceae . . . . . *philippinensis* No. 4.
3101. 4230, hc. globose, many, myc. crooked, spores 34—41 μ, on Myrsinaceae . . . *peregrina* No. 5.
3101. 4220, hc. ovate, oblong, or pyriform, many, spores 43—47 μ, myc. straight, on Myrtaceae . . . . . *ohianus* No. 6.
3101. 3240, hc. ovoid or globose, on Piperaceae . . . . . *asterinoides* No. 7.
3101. 4220, hc. clavate or lobed, on Apocynaceae . . . . . *goniomae* No. 8.

Setae present
ch. opposite or alternate
3133. 3232, setae 200—500 μ, on Rutaceae . *butleri* No. 9.
ch. alternate
3111. 6223. hc. ovoid, elliptic, cylindric or irregular, setae obtuse, 800 μ, on Guttiferae . . . . . *clusiae* No. 10.

No. 1. **Amazonia perrottetiae** Stevens, Bish. Mus. Bul. **19**: 47. 1925.
On Celastraceae: Perrottetia.
Type locality: Oahu, Hawaiian Islands, Stevens *717a.*
Citation: 264*.

No. 2. **Amazonia anacardiacearum** n. sp.

Colony epiphyllous, circular, often irregularly so, 1.5—5 mm. in diameter, black, sometimes coalescing. Mycelium when young forms a loose network of threads adherent to the host surface: closely netted when older. Branching opposite or alternate, mycelial diameter 7.6 μ, mostly straight. Capitate hyphopodia opposite, sometimes alternate, not crowded, about 15 μ apart. Stalk cell short, 3 μ; head cell oval to cylindrical, often angular or somewhat bent, about 11 ⩽ 9 μ. Mucronate hyphopodia chiefly opposite, about 22 μ long.

Perithecial setae none. Mycelial setae none. Perithecia dimidiate, radiate, slightly rough, dark brown or blackish, about 118—150 μ, in diameter. Asci evanescent. Spores 4-septate, constricted somewhat, length 45 μ, width 19 μ.

Group number 3103. 4220. — Fig. 1.
On Anacardiaceae: Tapirira?, British Guiana, Wismar, July 14, 1922. *277.*

No. 3. **Amazonia acalyphae** (Rehm) Theißen, Annal. Mycol. **14**: 407. 1916.
Meliola acalyphae Rehm, Philippine Jour. Sci., C. Bot. **8**: 252. 1913.
On Euphorbiaceae: Acalypha.

Type locality: Luzon, Philippines, Baker *483*.

Citations: 200, 4, 2.

Specimen: Phil. Bur. Sci. *483*.

No. 4. **Amazonia philippinensis** Theißen, Brot. **12**: 78. 1914.

On Lauraceae: Ullolitsea.

Type locality: Los Baños, Philippines.

No. 5. **Amazonia peregrina** (Sydow, H. & P.) Sydow, H. & P., Annal. Mycol. **15**: 238. 1917.

Meliola peregrina Sydow, H. & P., Philippine Jour. Sci. C. Bot. **8**: 479. 1913.

On Myrsinaceae: Maesa.

Type locality: Luzon, Philippines. Bur. Sci. McGregor *20255*.

Citations: 5, 2.

Specimen: the type. Fig. 2.

No. 6. **Amazonia ohianus** Stevens, Bish. Mus. Bul. **19**: 50. 1925.

On Myrtaceae: Metrosideros.

Type locality: Hawaii, Stevens *842*.

Citation: 264*.

No. 7. **Amazonia asterinoides** (Winter) Theißen, Annal. Mycol. **11**: 499. 1913.

Meliola asterinoides Winter, Hedw. **25**: 96. 1886.

Meliola asterinoides Winter var. *major* Gaillard, Le Gen. Mel. 58. 1892.

Meliola asterinoides Winter var. *psychotriae* Hennings, Hedw. **43**: 361. 1904.

Amazonia psychotriae (P. Hennings) Theißen, Annal. Mycol. **11**: 499. 1913.

Amazonia polypoda Sydow, H. & P., Annal. Mycol. **15**: 145. 1917.

Meliolaster mackenzii Doidge, Trans. Roy. Soc. So. Africa **8**: 123. 1920.

On Piperaceae: 349, 348, 83, Piper 22, 313, Artanthes 313. On Loganiaceae: Labordea 264. On Goodeniaceae: Scaevola 264. On Apocynaceae: Alyxia 264. On Euphorbiaceae: Euphorbia 264. On Thymelaeaceae: Wikstroemia 264, Daphnopsis 313. On Campanulaceae: Clermontia 264. On Compositae: 184, 313. On Labiatae: Hyptis, 184, 313. On Myrtaceae: Eugenia, 313. On Rubiaceae: 349, Psychotria 313, 354, Genipa 309, Webera 2, 307, 101, Coprosma 264, Straussia 264, Canthium 8.

Type locality: St. Thomas, Africa, on Piper.

Distribution: St. Thomas, Africa, 348, 349, 22, 83, 313; Congo 313, 354; So. Africa, 50; Brazil, 184, 101, 313; Amazon, 313, 354; Guadeloupe 2, 313; Hawaii 264; Porto Rico, 309; India 2, 313, 307.

Citations: 319*, 348*, 83*, 309*, 326, 2*, 109, 8*, 264*.

Specimen: Ule, Myc. Bras. *55*.

Arnaud (2) regards this and *Actinodothis piperis* as identical.

The large number of very dissimilar host families recorded for this species suggests that closer study would probably show it to be composed of several distinct species.

No. 8. **Amazonia goniomae** Doidge, Bothalia **1**: 204. 1924.

On Apocynaceae: Gonioma.

Type locality: Knysna District, South Africa, Doidge *17209*.

No. 9. **Amazonia butleri** (Sydow, H. & P.) n. comb.
Meliola butleri Sydow, H. & P. in Annal. Mycol. **9**: 379. 1911.
On Rutaceae: Citrus.
Type locality: India, Butler No. *1042*.
Citations: 307*, 8, 267.
No. 10. **Amazonia clusiae** (Stevens) n. comb.
Meliola clusiae Stevens, Ill. Biol. Mono. **2**: 52. 1916.
On Guttiferae: Clusia.
Type locality: Porto Rico, Stevens *8283*.

Genus No. 3. **Meliolina** Sydow, H. & P., Annal. Mycol. **12**: 553. 1914.
The distinctive characters of this genus are those of the *Meliolineae* without capitate hyphopodia and with or without setae and with 2 to 8-spored asci. The species selected as the type by Sydow was *M. cladotricha* Lév. on Myrsine, Höhnel (116) however, raises the point that it is uncertain what *M. cladotricha* Lév. really is and that therefore this species cannot be cited as the generic type, and he suggests as a substitute for the generic type *M. mollis* Berk. & Br. This species also, however, appears to be of questionable characters.

While the absence of typical capitate hyphopodia is regarded as a really distinctive character of the genus this character cannot be adhered to with absolute rigidity without excluding species which by their general character and habit clearly belong in the genus. A few species are with hyphopodia rare, but without the general character of a *Meliolina;* these evidently are transition forms between *Meliola* and *Meliolina.* The genus as here presented is perhaps somewhat heterogenous, and study of more types is needed to make the arrangement more nearly final.

Conspectus of Meliolina.

No setae present
- 4100. 41?0, spores fusiform, on Meliola . . . *paulliniae* . . No. 1.
- 4100. 4230, spores clavate, on Irene . . . . *irenicola* No. 2.
- 3100. 6440, on Santalaceae . . . . . *megalospora* No. 3.
- 2100. 4230, perithecia lenticular, on edge, on Meliola . . . . . *meliolae* No. 4.
- 2100. 2110, perithecia globose, on unknown host. *fuscopulveracea* No. 5.

Setae present
- Spores 5-septate
  - 4110. 3121, s. 150—180, obtuse, sub-tortuose, on Myrsinaceae . . . . . *quercinopsis* No. 6.
  - 4110. 6221, on Lythraceae . . . *quercinopsis* var. *megalospora* No. 7.
- Spores 4-septate
  - 3110. 42?1, on Lauraceae . . . . . *philippinensis* No. 8.
  - 311/20. 6243, on unknown host . . . . . *orbicularis* . No. 9.

Spores 3-septate
Perithecia setose
2440. 5242, violet tinted, s. 400 μ, 3—4 dichot, on Myrtaceae . . . . . *octospora* No. 10.
2440. 5242, not violet tinted, producing a diseased spot, on Myrtaceae . . . . . *sydowiana* No. 11.
2440. 6242, not producing a diseased spot, s. 500 μ, 5—9 dichotomous, on Myrtaceae . *mollis* No. 12.
2410. 4233, s. 300—350 μ, on Dilleniaceae . *malacensis* No. 13.
Perithecia not setose
Mycelial setae branched
2140. 5?32, colony strongly radiate, on Myrtaceae . . . . . *radians* No. 14.
2140. 5242, on Myrtaceae . . . . . *pulcherrima* No. 15.
2140. 5342, on Myrtaceae . . . . . *arborescens* No. 16.
2140. 6342, on Myrsinaceae . . . . . *cladotricha* No. 17.
Mycelial setae simple
2110. 5221, on Myrtaceae . . . . . *haplochaeta* No. 18.
2110. 3121, on Meliola on Palmae . . . *iquitosensis* No. 19.

No. 1. **Meliolina paulliniae** (Stevens) n. comb.
Perisporium paulliniae Stevens, Bot. Gaz. **65**: 228. 1918.
On Meliola sapindacearum on Paullinia pinnata.
Type locality: Porto Rico, Stevens *1207*.
Citation: 263a*.

No. 2. **Meliolina irenicola** (Doidge) n. comb.
Perisporium irenicolum Doidge, Both. **1**: 209. 1923.
On Irene peglerae on Halleria.
Type locality: Natal, South Africa, Doidge *17201*.

No. 3. **Meliolina megalospora** (Spegazzini) n. comb.
Meliola megalospora Spegazzini, An. Soc. Cient. Argentina **22**: 115. 1881.
Irene megalospora (Spegazzini) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.
On Santalaceae: Jodina.
Type locality: Cape San Antonio, Argentina.
Distribution; Argentine, 235, 255, 83; Patagonia 239.
Citation: 263*.
Specimen: the type.
Spegazzini's original diagnosis apparently describes conidiophores as setae.

No. 4. **Meliolina meliolae** (Stevens) n. comb.
Perisporium meliolae Stevens, Bot. Gaz. **65**: 228. 1918.
On Irene sororcula var. portoricensis on Eupatorium portoricense.
Type locality: Porto Rico, Stevens *6032*.
Citation: 263a*.

The transfer of these three species of *Perisporium*, all associated with Meliola colonies, possibly parasitic upon them, to *Meliolina* may be questioned, though on morphological grounds they clearly belong there.

No. 5. **Meliolina fuscopulveracea** (Rehm) n. comb.

Meliola fuscopulveracea Rehm, Hedw. **40**: 162. 1901.

On unknown host.

Type locality: Brazil, Ule No *1870*.

Citation: 116.

No. 6. **Meliolina quercinopsis** (Rehm) n. comb.

Meliolinopsis quercinopsis (Rehm) Beeli, Bull. Jard. Bot., Bruxelles **7**: 120. 1920.

Meliola quercinopsis Rehm, Hedw. **40**: 166. 1901.

On Myrsinaceae: Myrsine.

Type locality; Brazil, Ule *93*.

This species appears to be very questionable due to confounding the Meliola with its parasite. It may in reality be a parasitic *Meliolina* growing upon a *Meliola*.

No. 7. **Meliolina quercinopsis** (Rehm) Stevens var. **megalospora** (Rehm) n. comb.

Meliolinopsis megalospora (Rehm) Beeli, Bull. Jard. Bot., Bruxelles **7**: 159. 1920.

Meliola quercinopsis Rehm var. *megalospora* Rehm. Ascom. Fasc. 46 and in Annal. Mycol. **8**: 303. 1910.

On Lythraceae: Lythraea.

Type locality: Brazil.

Citation: 313.

No. 8. **Meliolina philippinensis** n. sp.

Colonies hypophyllous, thin, diffuse, indefinite, 1—3 cm. across or covering the leaf. Mycelium crooked, thin, 3—4 μ. Spot none. Hyphopodia none. Perithecial setae none. Mycelial setae —270 μ, acute, straight, simple. Perithecia globose, smooth, —125 μ in diameter. Asci evanescent. Spores 4-septate, 43-47 ⩽ 11—14 μ.

Group number 3110. 2421. — Fig. 3.

On Lauraceae, Cryptocarya sp., Philippine Bur. Sci. *24720*, Ramos, Catubig River, Samar, Feb.-March, 1916.

A very few structures which might be interpreted as capitate hyphopodia were seen, but they were so few and so abnormal that I do not so regard them.

No. 9. **Meliolina orbicularis** (Berkeley & Cooke) n. comb.

Meliola orbicularis Berkeley & Cooke, Journ. Linn. Soc., London **10**: 392. 1869.

On unknown host.

Type locality: Cuba *557*.

Distribution: Cuba 254; Australia 31.

Citations: 83*, 31.

Specimen: Cuban Fungi *880*.

The length of the setae and the diameter of the perithecia as given by Spegazzini are greater than those given by Gaillard.

No. 10. **Meliolina octospora** (Cooke) Höhnel, Sitzber. K. Akad. Wiss. Vienna, Math.-naturw. Kl. **128**: 557. 1919.

Meliola octospora Cooke, Grev. **11**: 38. 1882.

Meliolinopsis octospora (Cooke) Beeli, Bull. Jard. Bot., Bruxelles **7**: 119. 1920.

On Myrtaceae.

Type locality: Island of Mauritius, Africa.

Distribution: Mauritius 36, 83; Java 171; Australia 31.

Citations: 171*, 107, 31.

There is some doubt as to the identity of this form with Cooke's species though there is no doubt that it is the same as the form so reported by Penzig and Saccardo. Höhnel holds that *M. octospora* is identical with *Meliolina yatesii* and perhaps with *M. arborescens*.

No. 11. **Meliolina sydowiana** Stevens, Bish. Mus. Bul. **19**: 46. 1925.

On Myrtaceae: Metrosideros.

Type locality: Oahu, Hawaiian Islands, Stevens *721*.

Citation: 264*.

No. 12. **Meliolina mollis** (Berkeley & Broome) Höhnel, Sitzber. K. Akad. Wiss. (Vienna), Math.-naturw. Kl. **128**: 557. 1919.

Meliola mollis Berkeley & Broome, Jour. Linn. Soc., London **14**: 136. 1875.

Dimerosporium molle (Berkeley & Broome) Saccardo, Syll. Fung. **1**: 53. 1882.

Meliola mollis (Berkeley & Broome) em. Höhnel, Sitzber. K. Akad. Wiss., (Vienna) Math.-naturw. Kl. **119**: 461. 1910.

On Myrtaceae: Syzygium.

Type locality: Ceylon.

Distribution: India 14; Australia 31.

Citations: 14*, 15, 116. 108.

This species it cited by v. Höhnel as the type of the genus.

He says that it is preciesly like *M. pulcherrima* but for *M. mollis* he says "außen ziemlich dicht . . . mit Haaren bedeckt". While for *M. pulcherrima* Sydow says " . . . basi hyphis plerumque . . . cinctis".

No. 13. **Meliolina malacensis** (Saccardo) n. comb.

Meliola malacensis Saccardo, Bul. Orto Bot. Univ. Napoli **6**: 43. 1921.

On Dilleniaceae: Wormia.

Type locality: Singapore.

Specimen: Baker, Fungi Mal. *451*.

No. 14. **Meliolina radians** Sydow, H. & P., Annal. Mycol. **12**: 553. 1914.

On Myrtaceae: Eugenia.

Type locality: Luzon, Philippines, Bur. Sci. *17383*.

Citation: 116.

Specimen: the type.

No. 15. **Meliolina pulcherrima** (Sydow, H. & P.) Sydow, H. & P., Annal. Mycol. **12**: 553. 1914.

Meliola pulcherrima Sydow, H. & P., Annal. Mycol. **11**: 254. 1913.

On Myrtaceae: Eugenia 297, 294, 301, 4, 5, 289.

Type locality: Luzon, Philippines.

Citations: 292, 301, 116, 289*.

Specimens: Syd., Fung. Exot. Exs. *124*., Phil. Bur. Sci. *383*.

This was previously reported by error as on Ficus.

No. 16. **Meliolina arborescens** (Sydow, H. & P.) Sydow, H. & P., Annal. Mycol. **12**: 553. 1914.

Meliola arborescens Sydow, H. & P., Annal. Mycol. **11**: 256. 1913.

Meliolina yatesii Sydow, Annal. Mycol. **15**: 195. 1917.

Meliolinopsis yatesii (Sydow, H. & P.) Beeli, Bul. Bot. Jard., Bruxelles **7**: 119. 1920.

On Myrtaceae: Eugenia.

Type locality: Todaya, Philippines, Elmer *11328*.

Citations: 296*, 292, 301, 4, 5, 116, 2.

Specimens: Philippine Bur. Sci. *25122*, *25134*.

M. yatesii was originally described as on Viburnum (?) but may indeed have been on one of the Myrtaceae. Being so closely alike I regard *M. arborescens* and *M. yatesii* as identical.

No. 17. **Meliolina cladotricha** (Léveillé) Sydow, H. & P., Annal. Mycol. **12**: 553. 1914.

Meliola cladotricha Léveillé, Ann. Sc. Nat., Sér. 3, Bot. **5**: 266. 1846.

On Myrsinaceae: 131, 20, 19; on Myrtaceae: Eugenia 138, 83, 307, 45, Syzygium 83, Melaleuca 83.

Type locality: Borneo.

Distribution: Borneo 131, 19, 20, 83; New South Wales 138; New Guinea 83, 347; Australia 83, 347; India 307; South Africa 45, 18b.

Citations: 20*, 138*, 83*, 307, 45*, 107.

Gaillard states that this species has both kinds of hyphopodia though rare. There is disagreement between the figures of Bornet and Gaillard and it is really uncertain what this species is. The 8-spored fungus described by Winter under this name is regarded by v. Höhnel as *M. mollis*.

No. 18. **Meliolina haplochaeta** Sydow, H. & P., Annal. Mycol. **15**: 145. 1917.

Meliolinopsis haplochaeta (Sydow, H. & P.) Beeli, Bul. Jard. Bot., Bruxelles **7**: 119. 1920.

On Myrtaceae: Metrosideros.

Type locality: Oahu, Hawaiian Islands.

Citations: 116, 264*.

No. 19. **Meliolina iquitosensis** (Hennings) n. comb.

Meliola iquitosensis Hennings, Hedw. **43**: 361. 1904.

Meliolinopsis iquitosensis (Hennings) Beeli, Bul. Jard. Bot., Bruxelles **7**: 119. 1920.

On Meliola on Palmae: Bactris.
Type locality: Amazon, Iquitos, Ule *3211*.
Citations: 101*, 102, 3.
Specimen: the type, Ule, Myc. Braz. *58*.
The type specimen, very heavily parasitized, from Dahlem clearly shows large, irregular capitate hyphopodia of a *Meliola* on which the *Meliolina* grew.

Genus No. 4. **Irene** Theißen and Sydow, Annal. Mycol. **15**: 194. 1917. *Appendiculella* v. Höhnel, Sitzber. K. Akad. Wiss. Wien Math.-naturw. Kl. **128**: 556. 1919.

The original characterization reads simply "characteres Meliolae, sed setae nullae". The type was given as *Irene inermis* (K. & C.) Th. & Syd. The genus *Appendiculella* was proposed by von Höhnel on the character of the posession of vermiform appendages to the perithecium and the absence of setae, with *A. calostroma* (Desmazières) v. Höhnel as the type species, he including under this as synonymous, *M. sanguinea*, *M. puiggarii*, *M. rubicola*, *M. manca*, *M. larviformis*, *M. echinus* and *M. cornu-caprae*.

The vermiform appendages though variable in presence, in a few species being even abundant or totally lacking, nevertheless constitute a character that appears to me to be worthy of generic distinction. Since, however, the designated type species of *Irene* posesses these appendages the name *Irene*, on subdivision of the original genus *Irene*, belongs to those forms bearing these appendages.

It is somewhat remarkable that in all the species of *Irene* the capitate hyphopodia are predominantly angular.

Conspectus of Irene.

Spores 3-septate
- Ch. opposite or alternate
  - 2203. 4220, hc. lobed, on Flacourtiaceae . . . . *natalensis* No. 1.
  - 2203. 4220, spores slightly smaller, ch. remote, on Flacourtiaceae . . . . . *natalensis* var. *laxa* No. 2.
  - 2203. 4220, ch. crowded and small, on Flacourtiaceae . . . . . *natalensis* var. *conferta* No. 3.
- Ch. alternate
  - 2201. 5330, hc. irregular-angular, appendages 15—50 μ, on Rhamnaceae . . . . . *splendens* No. 4.
  - 2201. 6330, hc. irregular to lobed, appendages 70—90 μ, mycelial cells about 18 μ long, on Celastraceae . . . . . *speciosa* No. 5.
  - 2201. 4240, hc. irregular, sub-lobed, appendages 65—80 μ, mycelial cells 30—50 μ long, on Celastraceae . . . . . *gloriosa* No. 6.
  - 2201. 4220, hc. globose, angular, appendages 100—130 μ, on Rosaceae . . . . . *calostroma* No. 7.

Spores 4-septate

Appendages 60 μ +

3201. 5220, hc. globose to angular, appendages 80—100 μ, on Compositae . . . . . *sororcula* No. 8.

3201. 3220, hc. sub-globose, regular, appendages 60 μ, on Compositae . . . . . *sororcula* var. *vernoniae* No. 9.

3201. 4220, hc. irregular, lobed, appendages 6—12, 80—100 μ, on Compositae . *sororcula* var. *portoricensis* No. 10.

3201. 4220, hc. sub-ovate, appendages 60—100 μ, peri. 140—170 μ, on Euphorbiaceae . . . . *larviformis* No. 11.

3201. 5220, hc. ovate, cuneate or irregular, appendages 85 μ, on Euphorbiaceae . *larviformis* var. *arecibensis* No. 12.

320?. 4230, hc. globose or ovate, angular, appendages 80—150 μ, on unknown host . . . . . *rimbachii* No. 13.

3201. 4230, hc. pyriform or angular, appendages 80—80 μ, peri. 200—230 μ, on Araliaceae . . *araliae* No. 13a.

3201. 5330, colony crustose, hc. ovate, clavate, appendages 85—150 μ, peri. 300 μ, on Euphorbiaceae . . . . . *cornu-caprae* No. 14.

3201. 5220, appendages numerous, 100—200 μ, on Moraceae . . . . . *echinus* No. 15.

Appendages 60 μ —

3201. 4220, hc. globose, few, often long-pedicelled, appendages merely high conic warts, on Moraceae . . . . . *tonkinensis* No. 16.

3201. 4220, hc. sub-globose, not rare, appendages variable, 36 μ, on Moraceae . . . *tonkinensis* var. *cecropiae* No. 17.

3201. 3220, hc. obovoid, often bent, appendages 30—40 μ, colonies sub-crustose, on Scrophulariaceae . . . . . *peglerae* No. 18.

3201. 5240, hc. pyriform, appendages 35 μ, conic, on Solanaceae . . . . . *winteri* No. 19.

3201. 5240, appendages short to conic, on Solanaceae . . . . . *winteri* var. *hyphopodiigera* No. 20.

3201. 4230, hc. irregular or lobed, appendages 35—50 μ, on Solanaceae . . . . . *adelphica* No. 21.

3201. 4320, hc. pyriform, slightly irregular, often lobed, appendages 35 μ, on Dilleniaceae . . *papillifera* No. 22.

3201. 4230, hc. ovoid, pyriform, angular or irregular, appendages 51 μ, on Guttiferae . . . *calophylli* No. 23.

3201. 3220, hc. ovoid or irregular, appendages 51 μ, on unknown host . . . . . *tuberculata* No. 24.

3201. 3230, hc. globose or lobed, appendages 50 μ, on Loganiaceae . . . . . *inermis* No. 25.

3201. 3230, hc. round or lobed, appendages 50 μ,
on Loganiaceae . . . . . *inermis* var. *macilenta* No. 26.
3201. 5220, hc. round or lobed, appendages 50 μ,
on unknown host . . . . . *echinata* No. 27.

No. 1. **Irene natalensis** (Doidge) Doidge, So. African Jour. Nat. Hist. **2**: 40. 1920.

Meliola natalensis Doidge, Trans. Roy. Soc. So. Africa **5**: 724. 1917.

On Flacourtiaceae: Dovyalis.

Type locality: Natal, South Africa, Doidge *8980*.

Citations 51, 45*, 55*.

Specimens: Doidge *8980* (co-type).

No. 2. **Irene natalensis** (Doidge) Doidge var. **laxa** (Doidge) n. comb.

Meliola natalensis Doidge var. *laxa* Doidge, Trans. Roy. Soc. So. Africa **8**: 141. 1920.

On Flacourtiaceae: Dovyalis.

Type locality: Natal, South Africa, Doidge *11608*.

Citation: 51*.

No. 3. **Irene natalensis** (Doidge) Doidge var. **conferta** (Doidge) n. comb.

Meliola conferta Doidge, Trans. Roy. Soc. So. Africa **5**: 724. 1917.

Meliola natalensis Doidge var. *conferta* Doidge, Trans. Roy. Soc. So. Africa **8**: 141. 1920.

On Flacourtiaceae: Dovyalis.

Type locality: Natal, South Africa, Wood *345*.

Citations: 51, 45*.

Previously reported as *M. Sapindacearum* (278).

No. 4. **Irene splendens** Stevens, Bish. Mus. Bul. **19**: 41. 1925.

On Rhamnaceae: Alphitonia.

Type locality: Kauai, Hawaiian Islands, Stevens *430*.

Citation: 264*.

No. 5. **Irene speciosa** (Doidge) Doidge, So. African Jour. Nat. Hist. **2**: 40. 1920.

Meliola speciosa Doidge, Trans. Roy. Soc. So. Africa **5**: 726. 1917.

On Celastraceae: Gymnosporia.

Type locality: Natal, South Africa, Doidge *1740*.

Citations: 53, 45*, 18b.

Specimen: the type.

No. 6. **Irene gloriosa** (Doidge) Doidge, So. African Jour. Nat. Hist. **2**: 40. 1920.

Meliola gloriosa Doidge, Trans. Roy. Soc. So. Africa **8**: 139. 1920.

On Celastraceae: Celastrus.

Type locality: Natal, South Africa, Doidge *11565*.

Citations: 51*, 53.

Specimen: the type.

No. 7. **Irene calostroma** (Desmazières) v. Höhnel, Annal. Mycol. **16**: 213. 1918.

Sphaeria calostroma Desmazières. Bul. Soc. Bot. France, **4**: 1011. 1857.

Chaetosphaeria calostroma (Desmazières) Saccardo, Syll. **2**: 95. 1883.

Meliola puiggarii Spegazzini, Bol. Acad. Nac. Cient. Cordoba **11**, No. 228. 1889.

Meliola autumnalis Sydow, Annal. Mycol. **2**: 169. 1904.

Meliola rubicola Hennings, Hedw. **43**: 140. 1904.

Meliola calostroma (Desmazières) v. Höhnel, Annal. Mycol. **15**: 363. 1917.

Appendiculella calostroma (Desmazières) v. Höhnel, Sitzber. K. Akad. Wiss. Wien Math.-natur. Kl. **128**: 556. 1919.

Irene puiggarii (Spegazzini) Doidge, So. African Jour. Nat. Hist. **2**: 39. 1920.

On Rosaceae: Rubus 44, 83, 242, 245, 46, 261, 264, Pygeum 46, Leucosidea 46, Cliffortia 46, 55, Geum 279. On Leguminosae 9. On Rubiaceae 9.

Type locality: France, on Rosaceae.

Distribution: United States 83; Brazil 83; 242, 245; Japan 282, 100, 114; Porto Rico 261; Chile 279; Hawaii 264; Africa 46, 53, 18b.

Citations: 115, 110, 261*, 264*, 263*, 153, 55*, 331.

Specimens: types of *M. autumnalis* and *M. puiggarii*, Desm. Exs. No. *368*, Doidge *1574*, Rehm, Ascom. *2132*, Union of So. Africa, *1544. 1771.*

New records: On Rubus. Costa Rica, Cartago, June 23, 1923, *103;* Peralta, July 12, 1923. *339.*

M. autumnalis shows such slight differences from *M. puiggarii* that I place them both under the same species as above.

Species numbers 4, 5, 6, 7, are closely related and may well be of common ancestry.

M. manca, *M. sanguinea* and *M. puiggarii* were stated by Gaillard to be identical, while von Höhnel included also *M. calostroma* and *M. rubicola.* As I have stated elsewhere (261) *M. manca* is really distinct from these.

No. 8. **Irene sororcula** (Spegazzini) n. comb.

Meliola sororcula Spegazzini, Bol. Acad. Nac. Cien., Cordoba, **11**: No. 230. 1889.

Meliola compositarum Earle, Bul. N. Y. Bot. Gard. **3**: 306. 1905.

Appendiculella compositarum (Earle) Toro, Mycol. **17**: 144. 1925.

On Compositae: Baccharis 242, 83, Willoughbya 58, Eupatorium 58, 261, Bidens 277a. Mikania 331a, Osmia 331a. On Loganiaceae: Buddleya 58. On Apocynaceae: 9. On Dilleniaceae: 184.

Type locality: Brazil, No. *2774*, on Compositae.

Distribution: Brazil 174, 242, 83, 184; Porto Rico 58, 261; Jamaica 58; Costa Rica 277a; Santo Domingo 331a.

Citations: 263*, 261*, 331*.

Specimens: the type, *M. compositarum* Heller, 6185, co-type. Rab., Wint. & Pazsch. Fung. europ. *3543.*

No essential difference is apparent between the descriptions of the species united above. Examination of authentic material shows no essential differences. This species is very like *I. inermis* and possibly identical with it.

New records: — On Campanulaceae: Rollandia argentia. British Guiana, Tumatumari, July 8, 1922. 55a. On Rollandia fruticosa. British Guiana, Tumatumari, July 8, 1922. 55. On Compositae: Eupatorium. Ecuador, Terecita, Oct. 31, 1924, *183*, Barrn'nital, Nov. 17, 1924, *319;* British Guiana, Rockstone, July 13, 1922, *261;* July 17, 1922, *449;* Costa Rica, Siquirres, July 31, 1923, *684;* Panama, Tapia, Aug. 15, 1923. *1044*. On Mikania sp. British Guiana, Rockstone, July 16, 1922. *431;* Ecuador, Terecita, Oct. 29, 1924. *73*. On Schistocarpa sp. Ecuador, Terecita, Oct. 30, 1924, *143*.

The specimen on this host showed hyphopodia that were remarkable for their diversity of position, antrorse or retrorse.

On Calea pittieri. Panama, France Field, Sept. 2, 1924, *200*, Las Cruces trail, Sept. 28, 1924, *893*, Ft. Lorenzo trail, Oct. 10, 1924, *1155*; Costa Rica, Guapiles, July 18, 1923, *526*. On Liabum sp. Ecuador, Terecita, Oct. 20, 1924, *53*, Oct. 30, 1924, *139*, *166*, Barrn'nital, Nov. 17, 1924, *323*. On Apocynaceae: Rhabdadenia paludosa. Panama, Ft. Sherman, Sweetwater, Oct. 6, 1924, *1044*. On unknown host. Peru, Hda. Chalhuapuquio, Dec. 6, 1924, *147*; Panama, Loma Bracho, Sept. 13, 1924, *486*; Costa Rica: Port Limon, July, 9, 1923, *819*.

In the specimens on Calea the mycelium is more lax, sinuous and thin, 6 μ, the capitate hyphopodia more distant and longer (the stalk cell sometimes 36 μ long) and the perithecia rarely have well developed vermiform appendages; the formula therefore becomes $3\frac{1}{2}01$.

The specimen on Mikania had a colony of very different aspect, being very minute and dense, the mycelium very crooked, with numerous perithecia clustered in its center.

To previous descriptions of this species should be added that the perithecia are borne on disks, at first entire, later fringed. One of the most distinctive characters of the species is the irregularity in position of the hyphopodia, antrorse, retrorse, or perpendicular. The specimens on Liabum differ in having more dense colonies, more crowded hyphopodia, smaller spores, $32 \leqslant 10$ μ.

No. 9. **Irene sororcula** (Spegazzini) Stevens var. **vernoniae** n. var.

Group number 3201. 3220. — Fig. 4.

On Compositae: Vernonia. Panama, Empire, Oct. 8, 1925, *1132* (type), Summit, Sept. 6, 1924, *308*, Sept. 12, 1924, *465*, Ft. Lorenzo Trail, Oct. 10, 1924, *1171*, Mandingo, Oct. 15, 1924, *1319*, Tapia, Aug. 15, 1923, *1047*; Costa Rica, Siquirres, July 31, 1923, *706*.

This form agrees with the type with the exception that the capitate hyphopodia are smaller, 11 μ, sub-globose and regular and the perithecial appendages, instead of tapering toward the apex, enlarge to a swollen tip. The spores are smaller, $32—36 \leqslant 11$ μ.

No. 10. **Irene sororcula** (Spegazzini) Stevens var. **portoricensis** (Stevens) n. comb.

Meliola compositarum Earle var. *portoricensis* Stevens, Ill. Biol. Mono. **2**: 22. 1916.

On Compositae: Eupatorium.

Type locality: Porto Rico, Stevens *4301*.

Citation: 261*.

No. 11. **Irene larviformis** (Hennings) n. comb.

Meliola larviformis Hennings, Hedw. **43**: 362. 1904.

Appendiculella larviformis (Hennings) v. Höhnel, Sitzber. K. Akad. Wiss. Wien (Vienna), Math.-natur. Kl. **128**: 556. 1919.

On Euphorbiaceae: Acalypha; on Campanulaceae.

Type locality: Peru, Tarapoto, Ule *3293*. On Euphorbiaceae.

Citation: 101*.

Specimen: Ule *2947*.

New records:

On Euphorbiaceae: Acalypha diversifolia. Panama, Ft. Sherman, Sweetwater, Oct. 6, 1924, *1070*, Brazos Brook Reservoir, Sept. 22, 1924. *699*. On Acalypha sp. Costa Rica, Peralta, July 12, 1923, *366*. Siquirres, July 31, 1923, *689*; Panama, Chagres Mouth, Aug. 23, 1923, *1291*.

These specimens agree well with the descriptions by Hennings. A very marked character is the strong parasitism resulting in a dead spot somewhat larger than the colony, visible from both sides of the leaf as browned tissue, this surrounded by a bleached zone 2—3 millimeters in width.

Due to numerous parasites, but few perithecia were found. The parasites are present much more abundantly on the lower than on the upper sides of the leaves.

No. 12. **Irene larviformis** (Hennings) Stevens var. **arecibensis** (Stevens) n. comb.

Meliola arecibensis Stevens, Ill. Biol. Mono. **2**: 23. 1916.

Appendiculella arecibensis (Stevens) Toro, Mycol. **17**: 144. 1925.

On Euphorbiaceae: Acalypha.

Type locality: Porto Rico, Stevens *365a*.

Citation: 261*.

New record: on Acalypha, Costa Rica, Peralta, July 11, 1923, *328*.

No. 13. **Irene rimbachii** (Patouillard) n. comb.

Meliola rimbachii Patouillard, in Patouillard and Lagerheim, Bul. Herb. Boissier **3**: 66. 1895.

On unknown host.

Type locality: Ecuador.

No. 13a. **Irene araliae** (Sprengel) H. Sydow n. comb.

Amphitrichum araliae Sprengel in Svenska Vetensk. Akad. Handl. 52. 1820.

Sphaeria amphitricha var. *B. araliae* Fries, Syst. Myc. **2**: 514. 1823.

Meliola araliae (Sprengel) Montagne in Ramon de la Sagra Hist. Cuba 327. 1838.

Meliola amphitricha Fries var. *araliae arboreae* Bornet, Ann. Sci. Nat. Bot. Sér. 3., **16**: 257. 1851.

On Rutaceae: 313, 204. On Sapindaceae: Cupania 204, 313. On Araliaceae: Aralia 256, 313, 142, 147, 83. On Aquefoliaceae: Ilex 163, 84. On Cactaceae: Cactus 184, 313. On Meliaceae: Guarea 313, 204. On Magnoliaceae: Magnolia 332.

Type locality: Porto Rico, on Aralia.

Distribution: Porto Rico 142, 256, 313, 83; Cuba 147; Brazil 166, 184, 313; Paraguay 241; Ecuador 163, 84; So. U. S. A., Mississippi 332.

Citations: 83*, 20*.

Specimen: the type (studied by Sydow).

Sydow writes me that Sprengel's type specimen of *Amphitrichum araliae* from Upsala shows the following characters: "Colonies small, 1—3 mm. in diameter. Capitate hyphopodia alternate, irregular, pyriform, entire or somewhat lobed or angular, 22—26 ⩽ 13—17 μ. Perithecia 200—230 μ in diameter with a few long conical appendages, bent at their tips, 80—90 μ long, 25 μ thick at base. Spores 4-septate, oblong, rounded, somewhat constricted, brown, 38—45 ⩽ 17—20 μ." It is therefore an *Irene* and differs materially from the description of Gaillard.

No. 14. **Irene cornu-caprae** (Hennings) n. comb.

Meliola cornu-caprae Hennings, Hedw. **43**: 362. 1904.

Appendiculella cornu-caprae (Hennings) v. Höhnel, Sitzber. K. Akad. Wiss. Wien (Vienna), Math.-natur. Kl. Ab. I, **128**: 556. 1919.

On Euphorbiaceae: 101, Manihot 9.

Type locality: Amazon No. *2971*.

Specimens: Parts of the type from Kew and from Stockholm; Ule *2971*.

No. 15. **Irene echinus** (Hennings) n. comb.

Meliola echinus Hennings, Hedw. **43**: 363. 1904.

Appendiculella echinus (Hennings) v. Höhnel, Sitzber. K. Akad. Wiss. Wien (Vienna), Math.-natur. Kl. **128**: 556. 1919.

On Moraceae: Coussapoa 101.

Type locality: Amazon, Ule *3134*.

Citation: 101*.

Specimen: Ule, Myc. Bras. *57*.

New records: on Cecropia sps. British Guiana, Tumatumari, July 12, 1922, *226* and *237*.

These specimens agree well with the original description and figures of Hennings, in so far as they go, with the exception of the spores which he describes and figures as bearing a hyaline, hemispherical papilla at each end. These I do not find. Definite spore characters are in this group so rare that it is regrettable not to find them. Our specimen however agrees well with Ule's specimen *57* from Brazil. Hennings description of the capitate hyphopodia is very incomplete while the hyphopodia in

both the Ule specimens and my own are very characteristic. They are rare, far apart, and long-pedicellate (Fig. 5).

No. 16. **Irene tonkinensis** (Karsten & Roumeguère) n. comb.

Meliola tonkinensis Karsten & Roumeguère, Rev. Mycol. **12**: 77. 1890.

Meliola reticulata Karsten & Roumeguère, Rev. Mycol. **12**: 78. 1890.

Appendiculella tonkinensis (Karsten & Roumeguère) Toro, Mycol. **19**: 71. 1927. (The specimen cited by Toro is probably the variety given below.)

On Moraceae: Ficus.

Type locality: Tonkin, China.

Citations: 213, 83*.

Specimen: Roum., Fungi Sel. Gal. Exs. *5944*.

No. 17. **Irene tonkinensis** (Karsten & Roumeguère) Stevens var. **cecropiae** n. var.

Colonies epiphyllous, circular to irregular, 2—10 millimeters in diameter, diffuse. Mycelium black, crooked, forming a loose network, about 8 μ in width, branches mostly opposite. Setae none.

Capitate hyphopodia alternate, 1 per cell, 30—40 μ apart, head cell subglobular, about 11 μ in diameter, basal cell about 5 μ long. Mucronate hyphopodia opposite, bottle-shaped, about 20 μ long.

Perithecia black, rough, 150—170 μ in diameter, smooth or with short larviform perithecial appendages, 36 ⩽ 11 μ or less, uncinate at tip. Asci 2-spored, soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 17—19 ⩽ 36—43 μ.

Group number 3½01. 4220. — Fig. 6.

On Moraceae: Cecropia longifera. Panama, France Field, Aug. 3, 1924, *972*, Corozol Trail 17, Aug. 20, 1924, *122*. On Cecropia arachnoidea, Panama, New Limon, Aug. 4, 1924, *1016* (type).

While agreeing with *I. echinus* in the possession of larviform appendages this fungus differs decidedly in the character of its mycelium, capitate hyphopodia, the length of the appendages, and in being strictly epiphyllous while *I. echinus* is strictly hypophyllous. It agrees reasonably well with *I. tonkinensis*, except that the capitate hyphopodia are not rare, and particularly in the variability of the perithecial appendages which as described in *I. tonkinensis* are merely conic protuberances. Some colonies bear perithecia that are quite smooth, without conic roughenings. In other colonies there are a few short conic protuberances; in still other cases the appendages are numerous, well developed and larviform. Such extensive variation in this character is quite unique in the genus.

No. 18. **Irene peglerae** (Doidge) Doidge, So. African Jour. Nat. Hist. **2**: 40. 1920.

Meliola peglerae Doidge, Trans. Roy. Soc. So. Africa **5**: 730. 1917.

On Scrophulariaceae: Anastrabe, Halleria.

Type locality: Natal, South Africa, Pegler *2363*.

Citations: 45*, 56.

Specimens: Doidge *9036* (compared with type), *2363*, Pegler 1883.

No. 19. **Irene winteri** (Spegazzini) Sydow, H. & P., Annal. Mycol. **15**: 194. 1917.

Meliola winteri Spegazzini, An. Soc. Cient. Argentina **26**: no. 53. 1888.

On Solanaceae: 83, Solanum 241, 83, 163, 313, 206, 9.

Type locality: Paraguay.

Distribution: Paraguay 241, 83, 313; Ecuador 163, 83.

Citations: 83*, 263*, 84, 206, 301, 277a.

Specimen: the type.

Spegazzini says that possibly *M. tomentosa* Wint. is identical with this, also *M. ampullifera* Wint.

No. 20. **Irene winteri** (Spegazzini) Sydow, H. & P. var. **hyphopodiigera** (Spegazzini) n. comb.

Meliola winteri Spegazzini var. *hyphopodiigera* Spegazzini, An. Mus. Nac., Buenos Aires **32**: 359. 1924.

On Solanaceae: Cestrum.

Type locality: Argentine.

Citation: 63*.

The perithecia of this species are described by Spegazzini as very rough, covered with conic protuberances 15—18 ⩽ 15 μ. This alone, were it not regarded as a variety of *A. winteri* which has true larviform appendages, would place it in *Irenopsis*. It is obviously a transition form between these genera.

No. 21. **Irene adelphica** (Sydow, H.) n. comb.

Appendiculella adelphica Sydow, H., Annal. Mycol. **24**: 313. 1926.

On Solanum erythrotrichum.

Type locality: Los Angeles de San Ramon, Costa Rica *55a*.

Specimen: the type.

No. 22. **Irene papillifera** Sydow, H. & P., Annal. Mycol. **15**: 194. 1917.

On Dilleniaceae: Saurauia.

Type locality: Luzon, Philippines, Bur. Sc. *25294*.

Specimen: the type.

New record: on Doliocarpus. Panama, France Field, Sept. 2, 1924, *233*.

No. 23. **Irene calophylli** (Stevens) n. comb.

Meliola calophylli Stevens, Ill. Biol. Mono. **2**: 22. 1916.

Appendiculella calophylli (Stevens) Toro, Mycol. **17**: 144. 1925.

On Guttiferae: Calophyllum.

Type locality: Porto Rico, Stevens *7059*.

Citations: 261*, 215*, 331.

Distribution: Porto Rico 261; Dominica 29a.

No. 24. **Irene tuberculata** (Stevens) n. comb.

Meliola tuberculata Stevens, Ill. Biol. Mono. **2**: 22. 1916.

Appendiculella tuberculata (Stevens) Toro, Mycol. **17**: 144. 1925.

On unknown dicotyledonous plant.

Type locality: Porto Rico, Stevens *7742*.

No. 25. **Irene inermis** (Kalchbrenner & Cooke) Theißen & Sydow, Annal. Mycol. **15**: 194. 1917.

Meliola quinqueseptata Rehm, Ascomycetes *492*.

Meliola inermis Kalchbrenner & Cooke, Grev. **9**: 34. 1880.

Meliola acervata Ellis & Everhart, Bul. Torrey Bot. Club **24**: 126. 1897.

On Loganiaceae: Buddleya 127, 83, 184, 45, 51, 18b, 254, 53, Chilianthus 51. On Labiatae: 166, 83. On Compositae: 184, Eupatorium 166. On Solanaceae: Physalis 66, 264.

Type locality: South Africa, on Buddleya.

Distribution: South Africa 127, 348, 83, 45, 53, 51, 18b; Brazil 166, 83, 184; Hawaii 66, 264.

Citations: 127*, 83*, 264*, 58, 45*, 116.

Specimens: Heller *2773*, Doidge *1742*, Rab. Wint. & Pazschke Fungi europ. *2752*.

Earle states that specimens from Brazil reported by Ule as *Meliola inermis 2543* Rab. Wint. Fung. europ. are really *Meliola compositarum* Earle. The original description gives "appendiculis nullis" based on a specimen *1251* on Buddleia. Gaillard states that the perithecia are covered with cutinized appendages in the form of a horn 60 ⩽ 15 μ and he figures a typical larviform appendage. The most reliable record of this fungus is perhaps that of Miss Doidge who studied the type specimen and describes the perithecial surface as covered with "conical or horn-shaped unicellular processes 60 ⩽ 15 μ". The evidence is complete that vermiform appendages here obtain.

New record: on Solanaceae indet. Ecuador, San Miguel, Nov. 4, 1924. *229*.

No. 26. **Irene inermis** (Kalchbrenner & Cooke) Theißen & Sydow var. **macilenta** (Winter) n. comb.

Meliola inermis Kalchbrenner & Cooke var. *macilenta* Winter, in Gaillard, Le Gen. Mel. 65. 1892.

On unknown host.

Type locality: Saint Thomas, Africa.

Citation: 348.

No. 27. **Irene echinata** (Gaillard) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.

Meliola echinata Gaillard, Le Gen. Mel. 61. 1892.

On unkown host.

Type locality: Sumatra, Forbes No. *3132*.

Citations: 83*, 69*.

Genus No. 5. **Irenopsis** Stevens, Annal. Mycol. **25**: 411. 1927.

Characters of *Irene* but with perithecial setae and not with larviform appendages on the perithecium. Type species *Meliola tortuosa* Winter = *Irenopsis tortuosa* (Winter) Stevens. This genus constitutes a well defined group within the Meliolineae numbering at present 45 species and varieties.

Conspectus of Irenopsis.

Spores 3-septate

2401. 6340, ps. 500 μ, obtuse or clavate, on Compositae . . . . . *guignardi* No. 1.

2401. 5230, ps. 100—150 μ, on Compositae . *portoricensis* No. 2.

Spores 4-septate

Ps. not uncinate or twisted

Ch. alternate or opposite

3403. 3220, hc. globose to ovate, 10—14 μ, ps. 3—7, 100—120 μ, slightly swollen, on Leguminosae . . . . . *ingae* No. 3.

Ch. opposite

3402. 4230, colonies 1—3 mm., hc. oblong to globose, ps. obtuse, 300—800 μ, on Goodeniaceae . . . . . *scaevolicola* No. 4.

3402. 3220, colonies —1 mm., crowded, hc. ovate to globose, 12—18 μ, ps. 6—8, 80 μ, obtuse, on Compositae . . . . . *conferta* No. 5.

Ch. alternate

Setae obtuse

3401. 4220, colonies 5—15 mm., ch. 30—70 μ apart, ovate, pyriform or irregular and angular, ps. 3—10, 100—150 μ, on Aquifoliaceae . . . . . *maricaensis* No. 6.

3401. 4220, colonies 1—5 mm., branches at right angles, hc. subglobose or angular, 17 μ, ps. few, 120 μ, on Rubiaceae . . . . . *chiococcae* No. 7.

3401. 3220, colonies 2—10 mm., hc. ovate, cuneate or angled, 30—70 μ apart, ps. 3—12, 140 μ, on Sapindaceae . . . . *cupaniae* No. 8.

3401. 3220, colonies 2—7 mm., hc. globose to subglobose, 9—11 μ, ps. 100 μ, on Sapindaceae . . . . . *araneosa* No. 9.

3401. 4230, colonies 2—5 mm., ps. 6—12, 80—100 μ, on Proteaceae . . . . . *rupalae* No. 10.

3401. 4230, colonies 1—2 mm., hc. globose, 10 μ, ps. 70—100 μ, on Celastraceae . *compacta* No. 11.

3401. 4220, colonies 1—2 mm., ch. crowded, ovate, globose or angular, ps. 1—5, 90 μ, on Myrsinaceae . . . . . *parathesicola* No. 12.

3401. 4220, colonies 2—3 mm., hc. truncate or slightly lobed to irregular, ch. close, 10—16 μ, ps. 6—12, 70—90 μ, on Rutaceae . *bosciae* No. 13.

3401. 3220, colonies, 3—5 mm., hc. ovate, irregular or angled, ps. 5—12, 60—90 μ, on Anacardiaceae . . . . . *kentaniensis* No. 14.

3401. 4330, hc. globose or lobed, distant, ps. 60—80 μ, on Tiliaceae . . . . . *coronata* No. 15.

3401. 4220, colonies 1—3 mm., ch. 15—50 μ apart, not crowded, globose, pyriform, 14 μ, ps. 1—5, 70—85 μ, on Tiliaceae . . . . . *coronata* var. *triumfettae* No. 16.

3301. 4220, ps. 100 μ, torulose or uncinate, on Tiliaceae . . . . . *coronata* var. *vanderystii* No. 17.

3401. 4220, colonies 5—10 mm., hc. ovate, globose, 20 ⩽ 14 μ, 50—80 μ apart, ps. many, 85 μ, on Lauraceae . . . . *ocoteae* No. 18.

3401. 3220, colonies 5—20 mm., mycelium scant, ch. 75 μ apart, hc. ovoid, pyriform or irregular, ps. 3—10, 30—85 μ, on Melastomataceae . . . . . *miconiicola* No. 19.

3401. 4330, colonies 2—5 mm,, hc. pyriform, irregular, angular, mycelium not scant, ps. 3—10, 30—80 μ, on Melastomataceae . . . . . *miconiae* No. 20.

3401. 3220, colonies 1—2 mm., ps. thin, 4 ⩽ 80 μ, hc. ovate, on Leguminosae . *chamaecristicola* No. 21.

3401. 3220, colonies 1—10 mm., branches at right angles, ch. 25 μ apart, cylindrical, 17 ⩽ 10 μ, ps. few, 80 μ, on Polygonaceae . . . . . *rectangularis* No. 22.

3401. 4330, ps. 80—120 μ, broadly rounded, hc. pyriform, colony crustose, on Marcgraviaceae . . . . . *ramonensis* No. 23.

3401. 4230, Colonies —2 mm., hc. entire or sublobed, ps. 84—160 μ, on Cucurbitaceae . . . . . *zehneriae* No. 23a.

Setae acute

3401. 2120, colonies 2—5 mm., hc. globose, ovate, 30—60 μ apart, ps. 5—7, 225 μ, acute, on Rubiaceae . . . . . *bayamonensis* No. 24.

3401. 5320, colonies 3—5 decimeter, ps. 100—200 μ, acute, ch. not crowded, oblong to cylindric, on Myrsinaceae . *armata* No. 25.

3401. 5230, colonies 1—3 mm., hc. ovate or angular, ps. 100—150 μ, acute, on Icacinaceae . . . . . *comata* No. 26.

3401. 4220, colonies 1—2 mm., hc. globose, 10—12 μ, ps. 4—5, 100—130 μ, acute, on unknown host . . . . . *curvata* No. 27.

3401. 6340, colonies 4—8 mm., subcrustose, hc. elongate or lobed, ps. 150 ⩽ 10 μ, on Lauraceae . . . . . *martiniana* No. 28.

3401. 3220, hc. clavate, ps. 5—10, 40—100 μ, acute, on Malvaceae . . . . *bastardiopsidis* No. 29.

S. acute or obtuse

3401. 4220, colonies 1—2 mm., hc. globose or lobed, 10—15 μ, s. 10 μ thick ⩽ 150—180 μ, acute or obtuse, on Malvaceae . . . . . *molleriana* No. 30.

3401. 3220, colonies 1—3 mm., hc. globose, ovate or angled, ch. closer than 85 μ, ps. few, often 1, 45—55 μ, on Malvaceae . . . . . *molleriana* var. *sidicola* No. 31.

3401. 3220, colonies 1—2 mm., globose or lobed, s. slightly curved, 140 μ, acute or obtuse, on Cucurbitaceae . . . . *aciculosa* No. 32.

3401. 3220, on Verbenaceae . . . . *aciculosa* var. *viticis* No. 33.

S. bidentate

3401. 5230, colonies 5—15 mm., ch. 3—5 celled, ps. 900 μ, bidentate —15 μ, on Violaceae . . . . . *macrochaeta* No. 34.

Ps. straight or sometimes uncinate

3$\frac{3}{4}$01. 4310, colonies 1—3 mm., hc. cylindrical, ps. 125—165 μ, obtuse, hispid, on Fagaceae . . . . . *costaricensis* No. 35.

3$\frac{3}{4}$01. 3220, colonies very thin, hc. globose, ovate, pyriform, 10 μ, ps. 3—4, 100 μ, obtuse, on Rhamnaceae . . . . . *tenuissima* No. 36.

Ps. few, rarely none

3$\frac{1}{4}$02. 3220, colonies 2—4 mm., hc. globose, pyriform, 10 ⩽ 8 μ, ps. few or 0, 125 μ, obtuse, on Solanaceae . . . . . *solani* No. 37.

3$\frac{1}{4}$01. 3220, colonies 3—10 mm., + disk, hc. sub-globose or angular, ps. few or none, short, on Melastomataceae . . *conostegiae* No. 38.

Ps. twisted or uncinate

3301. 5220, hc. sub-ovate, pyriform, ps. —250 μ, on Piperaceae . . . . . *tortuosa* No. 39.

3301. 3230, hc. sub-ovate, ps. 3—7, 100—120 μ, on Flacourtiaceae . . . . . *claviculata* No. 40.

3301. 4220, colonies 1—3 mm., hc. pyriform or angular, 20 ⩽ 14 μ, ps. 115 μ, on Anacardiaceae . . . . . *comocladiae* No. 41.

3301. 3210, colonies thin, hc. globose, 10—11 μ, ps. 3—5, 90 μ, hooked, on Euphorbiaceae . . . . . *crotonis* No. 42.

3301. 5230, colonies 3—10 mm., hc. subglobose, ps. —80 μ, echinulate, on Sterculiaceae . . . . . *guianensis* No. 43.

3301. 3220, colonies 1—4 mm., hc. pyriform, 20 ⩽ 14 μ, ps. 30—40 μ, on Leguminosae . . . . . *toruloidea* No. 44.

Ps. uncinate, rarely wanting

31/301. 3210, colonies 1—8 mm., hc. subglobose, 11 μ, ps. 32—50 μ, tip swollen, uncinate, on Bignoniaceae . . . . . *bignoniacearum* No. 45.

No. 1. **Irenopsis guignardi** (Gaillard) n. comb.

Meliola guignardi Gaillard, Bul. Soc. Mycol. France **8**: 176. 1892.

Type locality: Ecuador, on unknown host. On Turpinia 331a.

Distribution: Ecuador 83, 163; Santo Domingo 331a.

Citation: 83*.

Specimen: Lagerheim 1892, the type.

The specimen reported by me from Porto Rico (261) under this name is given below as a new species.

No. 2. **Irenopsis portoricensis** n. sp.

Colonies amphigenous, 1—2 mm. in diameter, very black and dense. Mycelium coarse, 14 μ, dark, sub-straight. Spot none. Capitate hyphopodia alternate, antrorse, very large. Stalk cell 10—30 μ long, head cell very large, to 43 ⩽ 25 μ, irregular or lobed. Mucronate hyphopodia ampulliform, few.

Perithecial setae very numerous, 100—150 μ long, dark. Mycelial setae none. Perithecia globose, 300 μ in diameter. Asci evanescent. Spores 3-septate, 54 ⩽ 15 μ.

Group number 2401. 5230. — Fig. 7.

On Staphyleaceae: Turpinia panniculata. Porto Rico, Maricao, July 19, 1915, *8922*, Sept. 20, 1913, *3685* (type).

Reported as *M. guignardi* (261) but from this it differs in mycelial characters. This is probably the form reported by Toro (331a) as *M. guignardi*.

No. 3. **Irenopsis ingae** (Stevens & Tehon) n. comb.

Irene ingae Stevens & Tehon, Mycol. **18**: 20. 1925.

On Leguminosae: Inga.

Type locality: British Guiana, Stevens *559*.

Citation: 266*.

No. 4. **Irenopsis scaevolicola** (Stevens) n. comb.
Irene scaevolicola Stevens, Bish. Mus. Bul. **19**: 45. 1925.
On Goodeniaceae: Scaevola.
Type locality: Oahu, Hawaiian Islands, Stevens *160*.
Citation: 264*.

No. 5. **Irenopsis conferta** (Tehon) n. comb.
Meliola conferta Tehon, Bot. Gaz. **67**: 502. 1919 (not *Meliola conferta* Doidge).
On Compositae: Rhacoma (Leuzea).
Type locality: Porto Rico, Mona Island, Stevens *6147*.
Citation: 309*.

No. 6. **Irenopsis maricaensis** (Stevens) n. comb.
Meliola maricaensis Stevens, Ill. Biol. Mono. **2**: 31. 1916.
On Aquifoliaceae: Ilex.
Type locality: Porto Rico, Stevens *3679*.
Citation: 215*,

No. 7. **Irenopsis chiococcae** (Stevens) n. comb.
Meliola chiococcae Stevens, Ill. Biol. Mono. **2**: 27. 1916.
On Rubiaceae: Chiococca.
Type locality: Porto Rico, Stevens *7743*.
Citation: 261*.

No. 8. **Irenopsis cupaniae** (Stevens) n. comb.
Meliola cupaniae Stevens, Ill. Biol. Mono. **2**: 29. 1916.
On Sapindaceae: Cupania.
Type locality: Porto Rico, Stevens *9143*.
Citation: 261*.

No. 9. **Irenopsis araneosa** (Sydow H. & P.) n. comb.
Meliola araneosa Sydow, H. & P., Leaf. Philippine Bot. **6**: 1922. 1913.
On Sapindaceae: Guioa.
Type locality: Mindanao, Philippines, *13553*.
Citation: 4.
Specimen: Philippine Bur. Sci. *13553*.

No. 10. **Irenopsis rupalae** (Spegazzini) n. comb.
Meliola rupalae Spegazzini, An. Mus. Nac., Buenos Aires **32**: 349. 1924.
On Proteaceae: Rupala.
Type locality: Argentine.

No. 11. **Irenopsis compacta** (Earle) n. comb.
Meliola compacta Earle, Bul. N. Y. Bot. Gard. **3**: 306. 1905 (not *Meliola compacta* (Lév.) Speg).
On Celastraceae: Crossopetalum.
Type locality: Porto Rico, Heller *6217*.
Specimen: Heller *6217*.
Citation: 261.

No. 12. **Irenopsis parathesicola** (Stevens) n. comb.
Meliola parathesicola Stevens, Ill. Biol. Mono. **2**: 24. 1916.
On Myrsinaceae: Parathesis.
Type locality: Porto Rico, Stevens *8192*.
Citation: 261*.

No. 13. **Irenopsis bosciae** (Doidge) n. comb.
Meliola bosciae Doidge, Trans. Roy. Soc. So. Africa **5**: 731. 1917.
On Rutaceae: Boscia.
On Capparidaceae: Maerua.
Type locality: Natal, South Africa, Doidge *2510*, on Boscia.
Citations: 45*, 215.
Specimens: Doidge *2510* (co-type), 9016.

No. 14. **Irenopsis kentaniensis** (Doidge) n. comb.
Meliola kentaniensis Doidge, Trans. Roy. Soc. So. Africa **8**: 113. 1920.
On Anacardiaceae: Rhus.
Type locality: Natal, South Africa, Pegler *2354*.
Citation: 48*.

No. 15. **Irenopsis coronata** (Spegazzini) n. comb.
Meliola coronata Spegazzini, An. Soc. Cient. Argentina **14**: No. 175. 1883.
On Tiliaceae: Luhea 236, 208, 21, 83, 184, 313, 255, 207. On Anacardiaceae: Schinus 83, 89, 313. On Sapindaceae: Cupania 313. On Rubiaceae: Lerchea 9. On Verbenaceae: 9.
Type locality: Guarapi, Paraguay, *3847*, on Luhea.
Distribution: Paraguay 236, 208, 83, 184, 313; St. Thomas, Africa 21, 207; Brazil 83, 89, 313; Argentine 255.
Citation: 83*.
Specimens: the type, Ule, Myc. Bras. *1970*, Balansa *3847*, Roum., Fungi Sel. Gal. Exs. *3223*.
As originally described by Spegazzini the perithecial setae were 60—80 ⩽ 5 μ. Gaillard offers the suggestion that this is only a variety of *Meliola obesa*.

No. 16. **Irenopsis coronata** (Spegazzini) Stevens var. **triumfettae** (Stevens) n. comb.
Meliola triumfettae Stevens, Ill. Biol. Mono. **2**: 30. 1916.
On Tiliaceae: Triumfetta 261, 331a. On Malvaceae: Hibiscus 261, 10.
Type locality: Porto Rico, Stevens *4421*, on Triumfetta. — Fig. 8.
Distribution: Porto Rico 261; Congo, Africa 10; Santo Domingo 331a.
Citation: 215.
New records: on Sterculiaceae, Helicteres guazumaefolia. Panama, Culebra, Oct. 2, 1924, *910*, Chiva-Chiva trail, Sept. 18, 1924, *602*. On Tiliaceae, Luhea speciosa. Panama, Chiva-Chiva trail, Sept. 18, 1924, *626*. On Malvaceae, Hibiscus tiliaceus. Panama, Loma Bracho, Sept. 13, 1924, *482*. On Malache sessiliflora. Panama, Corozal, Trail 17, Aug. 30, 1924, *125*, Las Cruces Trail, Sept. 2, 1924, *161*. On Malache?. Panama, Culebra,

Oct. 2, 1924, *913*, Chiva-Chiva Trail, Sept. 18, 1924, *602a*, Mandingo, Oct. 15, 1924, *1346*. On Malache ovata. Panama, Corozal, Trail 17, Aug. 30, 1924, *118*. On Malvaceae ind. Costa Rica, San Cecelia, Aug. 7, 1923, *746*.

No. 17. **Irenopsis coronata** (Spegazzini) Stevens var. **vanderystii** (Beeli) n. comb.
Meliola triumfettae var. *vanderystii* Beeli, Bul. Jard Bot., Bruxelles **7**: 100. 1920.
On Tiliaceae: Triumfetta.
Type locality: Congo, Africa, Vanderyst *2745*.

No. 18. **Irenopsis ocoteae** (Stevens) n. comb.
Meliola ocoteae Stevens, Ill. Biol. Mono. **2**: 29. 1916.
On Lauraceae: Ocotea.
Type locality: Porto Rico, Stevens *8428*.

No. 19. **Irenopsis miconieicola** (Stevens) n. comb.
Meliola miconieicola Stevens, Ill. Biol. Mono. **2**: 23. 1916.
On Melastomataceae: Miconia.
Type locality: Porto Rico, Stevens *8639*.
Citation: 261*.

No. 20. **Irenopsis miconiae** (Stevens) n. comb.
Meliola miconiae Stevens, Ill. Biol. Mono. **2**: 30. 19.
On Melastomataceae: Miconia.
Type locality: Porto Rico, Stevens *9366*.
Distribution: Porto Rico 261; Santo Domingo 331a.
Citation: 261*.

No. 21. **Irenopsis chamaecristicola** (Stevens) n. comb.
Meliola chamaecristicola Stevens, Ill. Biol. Mono. **2**: 26. 1916.
On Leguminosae: Chamaecrista.
Type locality: Porto Rico (Mona Island), Stevens *6113*.
Citation: 261*.

No. 22. **Irenopsis rectangularis** (Stevens) n. comb.
Meliola rectangularis Stevens, Ill. Biol. Mono. **2**: 27. 1916.
On Polygonaceae: Coccoloba.
On Malpighiaceae: Banisteria.
Type locality: Porto Rico, Stevens *7292*, on Coccoloba.
Citation: 261*.

No. 23. **Irenopsis ramonensis** (Sydow, H.) n. comb.
Meliola ramonensis Sydow, H., Annal. Mycol. **24**: 307. 1926.
On Marcgraviaceae: Marcgravia nepenthoides.
Type locality: Piedades de San Ramon, Costa Rica *330*.
Specimen: the type.

No. 23a. **Irenopsis zehneriae** (van der Bijl) n. comb.
Meliola zehneriae van der Bijl, So. Afr. Jour. Sc. **23**: 283. 1926.
On Cucurbitaceae: Zehneria.
Type locality: So. Africa.

No. 24. **Irenopsis bayamonensis** (Tehon) n. comb.
Meliola bayamonensis Tehon, Bot. Gaz. **67**: 506. 1919.
On Rubiaceae: Psychotria.
Type locality: Porto Rico, Stevens *392*.

No. 25. **Irenopsis armata** (Spegazzini) n. comb.
Meliola armata Spegazzini, Bol. Acad. Nac., Cordoba **11**: No. 231. 1889.
On Myrsinaceae: Myrsine 83. On Bignoniaceae: Amphilophium 313.
Type locality: Brazil, on Myrsine.
Distribution: Brazil, 242, 313, 83.
Citation: 263*.
Specimen: the type.

No. 26. **Irenopsis comata** (Doidge) n. comb.
Meliola comata Doidge, Trans. Roy. Soc. So. Africa **8**: 111. 1920.
On Icacinaceae: Pyrenacantha.
Type locality: Natal, South Africa, Doidge *11020*.
Citation: 48*.
Specimen: the type.
The host was first incorrectly reported as Ipomoea.

No. 27. **Irenopsis curvata** (Yates) n. comb.
Meliola curvata Yates, Philippine Jour. Sci. C. Bot. **13**: 367. 1918.
On unknown host.
Type locality: Samar, Philippines, Bur. Sc., Ramos *24642*.
Specimen: the type.

No. 28. **Irenopsis martiniana** (Gaillard) n. comb.
Meliola martiniana Gaillard, Le Gen. Mel. 68. 1892.
On Lauraceae: Persea.
Type locality: Florida, U. S. A.
Citation: 83*.
Specimens: the type, Rab.-Wint. & Pazschke, Fungi europ. *3852*, *39*.

No. 29. **Irenopsis bastardiopsidis** (Spegazzini) n. comb.
Meliola bastardiopsidis Spegazzini, An. Mus. Nac., Buenos Aires **32**: 348. 1924.
On Malvaceae: Bastardiopsis.
Type locality: Argentine.

No. 30. **Irenopsis molleriana** (Winter) n. comb.
Meliola molleriana Winter, Hedw. **25**: 98. 1886.
On Malvaceae: 349, 348, 83, 313, Abutilon 166, 83, 184, 313, 251; Sida 261, 10. On Trigoniaceae: Trigonia 166, 313, 184. On Piperaceae: 184, 313. On Borraginaceae: Varronia 261. On Caricaceae: Carica 184, 313. On Passifloraceae: Passiflora 184, 313. On Rutaceae: 313.
Type locality: St. Thomas, South Africa, on Malvaceae.
Distribution: South Africa 349, 348, 313; Congo 10; Brazil 166, 83, 184, 313, 251; Porto Rico 261; Paraguay 251; Santo Domingo 331a.

Citations: 83*, 347*, 267.

New records: on Malvaceae: Sida. Panama, Culebra, Oct. 2, 1924, *917*; Costa Rica, Peralta, July 13, 1923, *423*.

No. 31. **Irenopsis molleriana** (Winter) Stevens var. **sidicola** (Stevens & Tehon) n. comb.

Irene sidicola Stevens & Tehon, Mycol. **18**: 21. 1926.

On Malvaceae: Sida.

Type locality: British Guiana, Stevens *478*.

Citation: 266*.

No. 32. **Irenopsis aciculosa** (Winter) n. comb.

Meliola aciculosa Winter, Hedw. **25**: 98. 1886.

On Cucurbitaceae: 349, 348, 83. On Tiliaceae: Triumfetta, 164. On Rhamnaceae: 184.

Type locality: St. Thomas Island, Africa, on Cucurbitaceae, Moller.

Distribution: Africa 349, 348, 83; Ecuador 164; Brazil 184.

Citations: 348*, 83*.

Specimen: Ule, Myc. Bras. *2204*.

No. 33. **Irenopsis aciculosa** (Winter) Stevens var. **viticis** (Rehm) n. comb.

Meliola aciculosa Winter var. *viticis* Rehm, Leafl. Philippine Bot. **6**: 2257. 1914.

On Verbenaceae: Vitex.

Type locality: Los Baños, Philippines *1515*.

No. 34. **Irenopsis macrochaeta** (Sydow, H. & P.) n. comb.

Meliola macrochaeta Sydow, H. & P., Leafl. Philippine Bot. **5**: 1538. 1912.

On Violaceae: Alsodeia.

Type locality: Palawan, Philippines *12887*.

Citation: 4.

Specimen: the type.

No. 35. **Irenopsis costaricensis** n. sp.

Colonies amphigenous, abundant above, but not bearing perithecia, 1—3 mm. in diameter, scant below, but with perithecia. Mycelium nearly straight, 7 μ thick, dark. Capitate hyphopodia alternate. Stalk cell short, 3—7 μ; head cell mostly cylindrical, 18—20 ⩒ 10 μ, sometimes subglobose or obovate. Mucronate hyphopodia ampulliform 18 ⩒ 7 μ.

Perithecial setae 125—165 μ long, from the base of the perithecium; 7 μ thick, black, simple, obtuse at the tip, straight or twisted, minutely but distinctly hispid in its distal part. Mycelial setae none. Perithecia globose, 154—185 μ in diameter, arising from a radiate subicle, slightly rough with rounded protuberances. Spores 4-septate, 23—47 ⩒ 18—22 μ.

Group number 3¾01. 4320. — Fig. 9.

On Fagaceae: Quercus oocarpa. Costa Rica, Cartago, June 23, 1923, *64*.

This fungus is of special interest since only one of the Meliolineae, *Leptomeliola quercina*, has been described heretofore on the Fagaceae and that with 5-septate spores and 8-spored asci.

No. 36. **Irenopsis tenuissima** (Stevens) n. comb.
Meliola tenuissima Stevens, Ill. Biol. Mono. **2**: 24. 1916.
On Rhamnaceae: Gouania.
Type locality: Porto Rico, Stevens *3142*.
Distribution: Porto Rico 261; Costa Rica 277a; Santo Domingo 331a.
No. 37. **Irenopsis solani** (Stevens) n. comb.
Meliola solani Stevens, Ill. Biol. Mono. **2**: 15. 1916.
Irene solani (Stevens) Toro, Mycol. **19**: 73. 1927.
On Solanaceae: Solanum 261, Physalis 9.
Type locality: Porto Rico, Stevens *5750*.
Distribution: Porto Rico 261; Santo Domingo 331a.
Citation: 261*.
New records: on Solanaceae: Solanum. Costa Rica, El Alto, July 6, 1923, *230*; Panama, Tapia, Aug. 15, 1923, *1119*, 1048; British Guiana, Kartabo, July 23, 1922, *615*; on Solanaceae indet. Panama, Mandingo, Oct. 15, 1924, *1321*.
The fungus agrees perfectly with the Porto Rican type material. Reexamination of the type material and of the other specimens confirms my original description and I cannot agree with Toro that no true setae are present.
No. 38. **Irenopsis conostegiae** n. sp.
Colonies epiphyllous, indefinite, 3—10 mm. in diameter. Mycelium slightly crooked, 7 μ thick, closely adhering to the leaf, irregularly branched, loosely woven. Capitate hyphopodia alternate, not crowded. Stalk cell short, 3—4 μ; head cell subglobose and somewhat angular, 14 μ. Mucronate hyphopodia ampulliform, 22 × 7 μ.
Perithecial setae few or absent; when present, short. Mycelial setae none. Perithecia globose, slightly rough, 185 μ in diameter, borne on radiate disks. Asci evanescent. Spores 4-septate, 36 × 10—12 μ.
Group number 3401—3220. — Fig. 10.
On Melastomataceae: Conostegia xalapensis. Panama, France Field, Sept. 2, 1924 *215* and *216* (type), Oct. 3, 1924, *1000*.
This species is distinguished from *I. miconieicola* by its more abundant mycelium, from *I. miconiae* by the shape of its capitate hyphopodia. It is definitely characterized by the hyphopodia, the scant mycelium, the abundance of hypothecial disks and the small perithecia.
No. 39. **Irenopsis tortuosa** (Winter) n. comb.
Meliola tortuosa Winter, in Gaillard, Le Gen. Mel. 67. 1892.
On Piperaceae: Piper 83, 166, 261, 29, 331a. On Cyatheaceae: Dicksonia 83, 166, 184. On Compositae: Senecio 84. On Leguminosae: Cassia 166. On Tiliaceae: Triumfetta 166. On Malpighiaceae: 166. On Bignoniaceae: Jacaranda 184.
Type locality: Brazil, on Piper.
Distribution: Brazil 83, 166, 184; Ecuador 84; Porto Rico 261, 29; Santo Domingo 331a.

Citations: 83*, 261*, 215.

Specimen: the type.

New records: on Piperaceae, Piper peltatum. Panama, Summit, Sept. 6, 1924, *313*, Tumba Muerta, Sept. 27, 1924, *856*, Oct. 12, 1924, *1242*, Empire, Oct. 8, 1924, *1130*, Gatun, Oct. 11, 1924, *1209*; Trinidad, Cumuto, Aug. 16, 1922, *876*; British Guiana, Rockstone, July 3, 1922, *235*. A white parasite was found upon specimen No. *876*. On Piper sp. British Guiana, Tumatumari, July 11, 1922, *107*. This specimen differs form the original description in having shorter spores and setae and in being amphigenous. A species of *Helminthosporium* was found overgrowing it. On Piper sanjoseanum. Panama, Agua Clara, Sept. 17, 1924, *546*, New Limon, Oct. 4, 1924, *1015*.

All of the collections determined as *I. tortuosa* have spores 32—36 μ long, usually below 33 μ, as was true also of specimens collected in Porto Rico. This deviation in spore measurement from that recorded in the type description drawn from South American material is noteworthy.

This is the host of the type specimen from Brazil. This fungus is readily distinguished from others by the characteristic perithecial setae and the mycelium. The original description of Winter as given by Gaillard does not give the position of the hyphopodia which is in all my specimens alternate making the formula 3301. 5220. The perithecial subiculum does not appear to have been mentioned before but is of importance as a character. The mucronate hyphopodia are very numerous in many specimens and differ somewhat from Winter's description. The fungus is usually overgrown by various parasites.

In the *I. tortuosa* material from British Guiana, *235* (Fig. 11) the perithecial setae are about 70—110 μ long; the surface of the perithecium is only moderately rough, with rounded, not conic, projections; the capitate hyphopodia are subglobose, there is a small subicular development below the perithecium.

Specimens from Trinidad, Porto Rico, Panama on different species of Piper all agree closely.

No. 40. **Irenopsis claviculata** (Doidge) n. comb.

Meliola claviculata Doidge, Trans. Royal. Soc. So. Africa **8**: 113. 1920.

On Flacourtiaceae: Oncoba.

Type locality: Portuguese East Africa, Evans *7388*.

Citations: 48*, 49, 357.

Specimen: the type.

No. 41. **Irenopsis comocladiae** (Stevens) n. comb.

Meliola comocladiae Stevens, Ill. Biol. Mono. **2**: 25. 1916.

On Anacardiaceae: Comocladia, Spondias.

Type locality: Porto Rico, Stevens *9015*.

Citations: 261*, 72.

Distribution: Porto Rico 261; Dominica 72, 29c.

No. 42. **Irenopsis crotonis** (Stevens & Tehon) n. comb.
Irene crotonis Stevens & Tehon, Mycol. **18**: 20. 1926.
On Euphorbiaceae: Croton.
Type locality: Trinidad, Stevens *837*.
Citation: 266*.
Specimen: the type.
New records: on Asclepiadaceae, Hoya. Panama, Old Corozal Road, Sept. 5, 1924, *295*, Ft. Davis, Mt. Hope, Old Road, Sept. 25, 1924, *812*, Ancon, Sept. 26, 1924, *843*, Las Cruces Trail, Sept. 28, 1924, *898*.
There are several differences between these specimens and the type on Croton, from Trinidad. The colonies are much larger and amphigenous, the mycelium is much more crooked, a condition that may be accounted for by the pubescence.
No. 43. **Irenopsis guianensis** (Stevens & Dowell) n. comb.
Meliola guianensis Stevens & Dowell, Phytop. **13**: 248. 1923.
On Sterculiaceae: Theobroma.
Type locality: British Guiana, Stevens *974*.
Citation: 265*.
No. 44. **Irenopsis toruloidea** (Stevens) n. comb.
Meliola toruloidea Stevens, Ill. Biol. Mono. **2**: 25. 1916.
Irene toruloidea (Stevens) Stevens & Tehon, Mycol. **18**: 18. 1926.
On Leguminosae: Cassia, Inga.
Type locality: Porto Rico.
Distribution: Trinidad, Porto Rico.
Citations: 261*, 2, 215*.
New records: on Leguminosae, Cassia pilifera. Panama, Corozol, Trail 17, Aug. 20, 1924, *105*. On Cassia sp., Panama, Brazos Brook Reservoir, Sept. 22, 1924, *751*, Culebra, Oct. 2, 1924, *960*, Ft. Sherman, Sweetwater, Oct. 6, 1924, *1094*, Mandingo, Oct. 15, 1924, *1324*; Costa Rica, Peralta, July 11, 1923, *321*, Experiencia Farm, July 18, 1923, *551*, Port Limon, Aug. 10, 1923, *859*.
In some of these numbers the perithecial setae were merely clavate and somewhat swollen toward the tip, not really uncinate. The mycelium of *I. ingae*, *I. toruloidea* and *I. chamaecristicola* is of much the same character except that in *I. ingae* the capitate hyphopodia are not globular but are somewhat elongate, while in *I. chamaecristicola* they are nearly globular. In *I. toruloidea* the capitate hyphopodia are intermediate between these two. In all three the perithecia develop upon radiate subicles.
No. *1324* differs very markedly from *I. ingae* in its mycelium and hyphopodia and from other related species on Legumes in its perithecial setae. The epiphyllous colonies are usually heavily parasitized and therefore of quite different appearance from the hypophyllous colonies. The hypophyllous colonies show a much more crooked mycelium due evidently to the presence of numerous trichomes.

No. 45. **Irenopsis bignoniacearum** n. sp.

Colonies mostly epiphyllous, occasionally hypophyllous. 1—8 mm., circular and definite, or diffuse. Mycelium nearly straight, dark, 6 μ. Capitate hyphopodia alternate, 36 μ apart. Stalk cell short, 3—4 μ; head cell subglobose, 11 μ. Mucronate hyphopodia ampulliform, 18 ⩽ 5 μ.

Perithecial setae few, 32—50 μ long, thicker at the distal end, 11 μ, and curved or uncinate. Mycelial setae none. Perithecia globose, smooth, 105—125 μ, on a radiate disk. Asci evanescent. Spores 4-septate, 32—36 ⩽ 14 μ.

Group number 31/301. 3210.

On Bignoniaceae indet. Panama, Corozal, Trail 17, Aug. 30, 1924, *81* (type) and *83*.

The perithecial setae are so few, short and difficult to see that they may easily be overlooked, indeed they may be absent from some perithecia.

Genus No. 6. **Irenina** Stevens, Annal. Mycol. **25**: 411. 1927.

Like *Meliola* but devoid of mycelial setae and of perithecial setae and larviform appendages. Type *Irenina glabra*.

Conspectus of Irenina.

Spores 3-septate

2101. 5240, colonies 3—4 mm., dense, crustose, black, hc. globose, rare, on Ericaceae . . . . . *andromedae* No. 1.

2101. 4220, hc. globose, 7—10 μ, on Compositae . . . . . *abnormis* No. 2.

2101. 5230, colonies 2—5 mm., hc. globose, 10—12 μ, on Taxaceae . . . . . *podocarpi* No. 3.

2101. 4230, colony crustose, hc. globose, spores curved, on Taxaceae . . . . . *pitya* No. 4.

2101. 4230, colonies 1 mm., hc. oblong-ovate, spot definite, on Rosaceae . . . . . *sanguinea* No. 5.

2101. 4220, colonies 1—2 mm., on Myricaceae . . . . . *manca* No. 6.

2101. 5320, colonies 2—4 mm., hc. 2—3 lobed, on unknown host . . . . . *boni* No. 7.

2101. 5230, colonies thin, hc. often 2—3 lobed, on Ericaceae . . . . . *exilis* No. 8.

2101. 5230, hc. irregular to lobed, on Pinaceae . . . . . *pinicola* No. 9.

Spores 4-septate

Ch. alternate or opposite

3103. 5230, colonies 3—5 mm., hc. ovate, sub-lobed, disk present, on Myrtaceae . *valdiviensis* No. 10.

3103. 3220, colonies 1—2 mm., hc. subglobose or irregular, disk present, on Euphorbiaceae	*dalechampiae*	No. 11.
3103. 4220, colonies 6—8 mm., hc. ovate or lobed, on Sapindaceae	*wrightii*	No. 12.
3103. 5220, colonies 1—7 mm., hc. angular or lobed, stalk 10 μ, on Verbenaceae .	*sepulta*	No. 13.
3103. 5330, colonies —5 mm., tenuous, on unknown host	*ampullifera*	No. 14.
3103. 4230, colonies 3—4 mm., hc. globose or lobed, no disk, on Rutaceae	*obesa*	No. 15.
Ch. opposite		
3102. 3220, colonies 1—5 mm., hc. conical, on Sapindaceae	*bonplandi*	No. 16.
3102. 4230, hc. entire, obtuse-conic, on Eleocarpaceae	*amoena*	No. 17.
3102. 5340, colonies 2—4 mm., hc. globose, on unknown host	*laevis*	No. 18.
3102. 2220, colonies 2—3 mm., hc. ovate, globose, 12 μ, on Rubiaceae	*uncariae*	No. 19.
3102. 4230, colonies 2—7 mm., crustose, hc. clavate, no disk, on Apocynaceae . . .	*aspidospermatis*	No. 20.
Ch. alternate		
3101. 4220, colonies 1—3 mm., hc. globose, perithecium long dimidiate, on Thymelaeaceae	*aibonitensis*	No. 21.
3101. 3220, colony indefinite, hc. globose. 14 μ, on Rhamnaceae	*colubrinae*	No. 22.
3101. 3220, colonies 1—5 mm., hc. globose, 14 μ, on Compositae	*cyclopoda*	No. 23.
3101. 3220, mycelium sinuous, hc. globose, 11 μ, + disk, on Polygalaceae	*monninae*	No. 24.
3101. 3210, colonies 3—10 mm., ch. 32 μ apart, hc. globose, 11 μ, on Marcgraviaceae	*marcgraviae*	No. 25.
3101. 3210, hc. globose, 17—19 μ, rather close, on Euphorbiaceae	*alchorneae*	No. 26.
3101. 4220, colonies 1—2 mm., hc. regular, sub-globose, + disk, on Melastomataceae .	*shropshiriana*	No. 27.
3101. 4220, hc. globose or angular, on Solanaceae	*plebeja*	No. 28.
3101. 4220, hc. globose, irregular, on Solanaceae	*plebeja* var. *asperrima*	No. 29.

3101. 4230, colonies 2—3 mm., hc. ovate, globose, on Solanaceae	*laeta*	No. 30.
3101. 3220, hc. sub-globose, 11—14 μ, on Solanaceae	*solanicola*	No. 31.
3101. 3220, colonies 0.5—1.5 mm., dense, hc. globose, on Solanaceae	*portoricensis*	No. 32.
3101. 4230, colonies 1—2 mm., hc. sub-globose, pyriform, perithecia in close groups, on unknown host	*conglomerata*	No. 33.
3101. 3210, colonies 2—5 mm., hc. sub-globose, 15 μ, parasitic, on Zingiberaceae .	*parasitica*	No. 34.
3101. 3220, colonies 2—4 mm., hc. sub-globose to ovate, 11 ⩽ 14 μ, on Leguminosae .	*meibomiae*	No. 35.
3101. 3220, colonies 3—8 mm., hc. sub-globose, ovate, 14—18 μ, on Dilleniaceae .	*obscura*	No. 36.
3101. 4220, ch. pyriform, crowded, 17 ⩽ 10 μ, colonies 1—3 mm., spores irregular, on Acanthaceae	*irregularis*	No. 37.
3101. 4220, hc. pyriform, on Cornaceae .	*aucubae*	No. 38.
3101. 32—0, colonies 1—3 mm., hc. ovate, on Rubiaceae	*pencilliformis*	No. 39.
3101. 3120, colonies, 1—2 mm., hc. ovate, small, mainly at angles, mycelium very crooked, on Loganiaceae	*buddleyicola*	No. 40.
3101. 3220, hc. ovate, 14—17 μ, 14 μ distant, mycelium not meshed, on Labiatae . .	*hyptidicola*	No. 41.
3101. 3220, large perithecia and spores, on Labiatae	*hyptidicola* var. *wombalensis*	No. 42.
3101. 3220, colonies —5 mm., hc. ovate, globose, not crustose but meshed, on Labiatae	*anastomosans*	No. 43.
3101. 4210, hc. ovate, on Moraceae . . .	*reticulata*	No. 44.
3101. 3220, colony 1—5 mm., hc. ovate, on Bignoniaceae	*arachnoidea*	No. 45.
3101. 4220, colonies 1—5 mm., hc. ovate, 20—25 μ, on Urticaceae	*tremae*	No. 46.
3101. 4230, colonies 1 mm., hc. ovate, distant, on Euphorbiaceae	*verrucosa*	No. 47.
3101. 4230, colonies 1—2 mm., hc. pyriform, 14—16 μ, on Caprifoliaceae	*viburni*	No. 48.
3101. 4220, hc. ovate-oblong, on Guttiferae .	*mangostana*	No. 49.
3101. 3220, colony tenuous, hc. remote, clavate to irregular or sub-dentate, 20—30 ⩽ 8—9 μ, no disk, on Leguminosae .	*lonchocarpi*	No. 50.

3101. 4220, colonies 1—3 mm., dense, mycelium straight, hc. clavate, 20—25 ⩽ 12 μ, no disk, on Leguminosae . . .	*gesuitica*	No. 51.
3101. 4230, colonies 1—2 mm., crustose, hc. clavate, 20—25 ⩽ 12 μ, disk present, on Leguminosae	*ingaeicola*	No. 52.
3101. 4230, colonies 1—3 mm., hc. regular, clavate, 18—25 μ, + disk, on Rutaceae .	*fagaricola*	No. 53.
3101. 2220, colonies 2—4 mm., hc. clavate, oblong, on Meliaceae	*sandorici*	No. 54.
3101. 4220, colonies 3—12 mm., hc. ovate, cylindrical, 14 ⩽ 10 μ, on Zingiberaceae .	*costi*	No. 55.
3101. 3220, colonies 1—2 mm., hc. oblong, 15 ⩽ 17 μ, on Araceae	*aracearum*	No. 56.
3101. 3220, colonies 3—5 mm., hc. oblong, 8—12 μ, on Combretaceae	*laguncularíae*	No. 57.
3101. 5330, colonies 2—3 mm., tenuous, hc. cylindric, on Boraginaceae	*longipoda*	No. 58.
3101. 4320, colonies arachnoid, hc. cylindrical, on Melastomataceae	*heudelotii*	No. 59.
3101. 3220, colony sub-crustose, hc. elongate, straight, antrorse, on Melastomataceae .	*melastomacearum*	No. 60.
3101. 4230, colonies 1—2 mm., sub-crustose, hc. cylindric, 16—18 μ, on Apocynaceae .	*strophanthi*	No. 61.
3101. 3220, colony not dense, hc. ovoid to elliptic, antrorse, on Apocynaceae . . .	*escharoides*	No. 62.
3101. 4230, colonies 2—4 mm., hc. cylindrical or clavate, on Rosaceae	*prunicola*	No. 63.
3101. 3220, colonies 1—10 mm., hc. elliptical, 14 ⩽ 7 μ, occasional ascending branches, on Rubiaceae	*isertiae*	No. 64.
3101. 3210, colonies 1—10 mm., mycelium very angular, hc. globose, 14 μ, on Leguminosae	*cubitella*	No. 65.
3101. 4230, colony crustose, 2—3 mm., hc. globose, ovate or lobed, on Rubiaceae .	*glabra*	No. 66.
3101. 5220, colonies 1—3 mm., hc. subglobose or irregular, on Leguminosae .	*hymenaeicola*	No. 67.
3101. 5330, colonies 2—6 mm., hc. globose, or lobed, 14—18 μ, on unknown host .	*tomentosa*	No. 68.
3101. 4240, colony thin, ch. irregular, on Styracaceae	*aberrans*	No. 69.
3101. 3220, colonies 1—2 mm., crustose, hc. sub-globose, 14 μ, or sub-lobed, on Cucurbitaceae	*nigra*	No. 70.

3101. 3220, colonies 1—3 mm., hc. ovate, pyriform, or irregular, on Melastomataceae	*clidemiae*	No. 71.
3101. 3220, colonies 1—8 mm., hc. ovate or angular, perithecia rough, ch. 25 μ distant, on Piperaceae	*glabroides*	No. 72.
3101.3220, hc. angular, on Bignoniaceae	*glabroides* var. *schlegeliae*	No. 73.
3101. 4220, colonies 1—10 mm., myc. not crustose, hc. ovate or irregular, on Cucurbitaceae	*anguriae*	No. 74.
3101. 3230, colonies 5—10 mm., hc. ovate or irregular, antrorse, on Hamamelaceae	*scabra*	No. 75.
3101. 5220, colonies crustose, hc. ovate or angled, on Lauraceae	*calva*	No. 76.
3101. 4320, colonies 2—5 mm., mycelium crooked, hc. ovate, pyriform or angular, on Lauraceae	*perseae*	No. 77.
3101. 4220, colonies 1—2 mm., hc. ovate, pyriform or irregularly angular, non-hyphopodiate filaments occasional, on Gesneriaceae	*cyrtandrae*	No. 78.
3101. 5330, colonies 2—4 mm., hc. clavate or lobed, on Loganiaceae	*implicata*	No. 79.
3101. 3120, colonies —2 mm., myc. crooked, hc. clavate or truncate, irregular, on Cucurbitaceae	*confragosa*	No. 80.
3101. 4220, hc. ovate to irregular, on Combretaceae	*combreti*	No. 81.
3101. 3220, colonies 3—12 mm., hc. irregular, ovate to cylindrical, 18—22 μ, stipe 14—36 μ, on Dilleniaceae	*longipedicellata*	No. 82.
3101. 6330, colonies 2—5 mm., tenuous, hc. cylindric or lobed, on Aquifoliaceae	*lagerheimii*	No. 83.
3101. 6240, colonies 1—2 mm., hc. angular, irregular, on Araliaceae	*cheirodendronis*	No. 84.
3101.5330, colonies 1—4 mm., hc. irregularly angular, crowded, 18—25 μ, on Rutaceae	*trachylaena*	No. 85.
3101. 5220, colonies 5 mm., mycelium very crooked, hc. irregular, on Leguminosae	*cubitorum*	No. 86.
3101. 3220, colonies 5—10 mm., hc. very few, entire or irregular, on Euphorbiaceae	*subapoda*	No. 87.
3101. 5340, colonies 2—5 mm., thin, hc. irregular or lobed, 18—22 μ, stipe 25—30 μ, on Celastraceae	*ditricha*	No. 88.

3101. 3220, colonies 1—2 mm., crustose, hc. 10 μ, on Celastraceae . . . . . *gymnosporiae* No. 89.
3101. 5320, colonies 3—4 mm., crustose, hc. lobed, on Myrtaceae . . . . . *atra* No. 90.
3101. 4230, colonies 2—4 mm., tenuous, hc. lobed, variable, on Myrtaceae . . . . . *zeyheri* No. 91.
3101. 4240, colonies close, hc. 1—2—3 lobed, on Loganiaceae . . . . . *obducens* No. 92.
3101. 4230, colonies 1—3 mm., hc. subpyriform or 3—4 lobed, perithecia very rough, on Cucurbitaceae . . . . . *triloba* No. 93.
3101. 4320, colonies 1—2 mm., hc. lobed, on Violaceae . . . . . *rinoreae* No. 94.
3101. 3220, on Rubiaceae . . . . . *seminata* No. 95.
3101. 6420, colonies crustose, hc. few, on Magnoliaceae . . . . . *crustacea* No. 96.
3101. 5340, colonies arachnoid, large, ch. few, on Araliaceae . . . . . *morototoni* No. 97.
3101. 3220, hc. 18—24 μ, on Verbenaceae . *vilis* No. 98.
3101. 3230, colonies 1—3 mm., mycelium straight, hc. 15—18 ⩽ 9—12 μ, retrorse, on Leguminosae . . . . . *pseudanastomosans* No. 99.
3101. 4220, hc. 20—25 μ, with disk, on Myrtaceae . . . . . *atricha* No. 100.

No. 1. **Irenina andromedae** (Patouillard) n. comb.

Meliola andromedae Patouillard, Rev. Mycol. **10**: 137. 1888.

Irene andromedae (Patouillard) Sydow, H. & P., Annal. Mycol. **15**: 194. 1917.

On Ericaceae: Andromeda 154.

Type locality: Isle de France, Africa.

Citations: 154*, 301, 83*.

Patouillard writes of the perithecial surface as rough; Gaillard of conic cutinized protuberances.

Specimen: The type.

No. 2. **Irenina abnormis** (Theißen) Stevens, n. sp.

Meliola pulchella Spegazzini var. *abnormis* Theißen, Brot. **9**: 23. 1910.

On Compositae: Baccharis.

Type locality: Brazil.

No. 3. **Irenina podocarpi** (Doidge) n. comb.

Meliola podocarpi Doidge, Trans. Roy. Soc. So. Africa **5**: 725. Jan. 1917.

Irene anisomera Sydow, H. & P., Annal. Mycol. **15**: 194. Oct. 1917.

Irene podocarpi (Doidge) Doidge, So. African Jour. Nat. Hist. **2**: 40. 1920.

On Taxaceae: Podocarpus.

Type locality: Natal, South Africa, Doidge *1748*.

Distribution: Natal, South Africa, 45, 18b; Philippines 301. Porto Rico.
Citations: 45*, 51, 55*.
Specimen: Doidge 8897 (Compared with type).
Dr. Sydow writes me that the two species united above are identical.
New record: On Podocarpus coriaceus.
Porto Rico, Maricao, Jan. 5, 1914.

No. 4. **Irenina pitya** (Saccardo) n. comb.
Meliola pitya Saccardo, sp. n. ad int. Nuov. Giorn. Bot. **23**: 185. 1916.
On Taxaceae: Taxus.
Type locality: Caroga, N. Y.

Though the spore shape shows this and *I. podocarpi* to be closely related the colony differences probably warrant their maintenanee as distinct species.

No. 5. **Irenina sanguinea** (Ellis & Everhart) n. comb.
Meliola sanguinea Ellis & Everhart, Jour. Mycol. **2**: 42. 1888.
On Rosaceae: Rubus.
Type locality: Louisiana, Langlois *74*.
Specimen: Langlois Jan. 1896.

This has been regarded by numerous mycologists as identical with *M. manca* Ell. & Martin (see next number) and *M. puiggarii* Speg. (see p. 423). It is however distinguished from the latter by the absence of larviform appendages and by the distinctly parasitic character on Rubus, resulting in the reddish spots that gave rise to its name. It is distinguished from *M. manca* by its different hyphopodia and its parasitic habit.

No. 6. **Irenina manca** (Ellis & Martin) n. comb.
Meliola manca Ellis & Martin, Amer. Nat. **17**: 1284. 1883.
Irene manca (Ellis & Martin) Theißen & Sydow, Annal. Mycol. **15**: 461, 194. 1917.
Meliola manca var. *tenuis* Winter, in Gaillard, Le Gen. Mel. 38. 1892.
On Myricaceae: Myrica 67, 134, 64, 83, 261, 332, 313. On Rosaceae: Rubus 348, 64, 83, 84, 163, 184, 313, 158, 45, Geum 313. On Lauraceae: Persea 83, 313, Acaena 313. On Rubiaceae, Uncaria 9.
Type locality: Florida, U. S. A. on Myrica.
Distribution: Southern U. S. A. 67, 83, 134, 64, 332, 26, 313; Southern Africa 348, 83, 45; Ecuador 84, 313, 163; Brazil 313, 184; Porto Rico 261; China 158.
Citations: 153, 83*, 261*, 45*, 215.
Specimens: Ellis & Everhart, N. Amer. Fungi *1292*; Heller *6420*; Martin, Florida, 1884 and 1883 on Myrica; Earle, Alabama, 1896 on Myrica.

The host records cited above are open to question in so far as they refer to other than the Myricaceae. The others recorded probably really refer to *I. sanguinea* or *Irene calostroma*.

New records: On Myrica. Costa Rica: Cartago, June 23, 1923. *102*.

No mature perithecia were found, but characters of mycelium and hyphopodia agree well with descriptions of this species and with specimen of Martin in Ellis N. A. F. 1292.

No. 7. **Irenina boni** (Gaillard) n. comb.
Meliola boni Gaillard, Le Gen. Mel., 39, 1892.
Irene boni (Gaillard) Sydow, H. & P., Annal. Mycol. **15**: 194. 1917.
On unknown host.
Type locality: Tonkin, Bon *3319*.
Citation: 83*.
Specimen: the type.

No. 8. **Irenina exilis** (Sydow, H. & P.) n. comb.
Meliola exilis Sydow, H. & P., Annal. Mycol. **2**: 170. 1904.
Irene exilis (Sydow, H. & P.) Stevens, Bish. Mus. Bul. 19. 1925.
On Ericaceae: Gaultheria 279, Vaccinium 264.
Type locality: Chilean Andes.
Distribution: Chile and Argentine 279; Hawaii 264.
Specimen: the type.
New record: On Vaccinium (?) Costa Rica, Cartago, June 23, 1923, *84*.

No. 9. **Irenina pinicola** (Dearness) n. comb.
Meliola pinicola Dearness, Mycol. **18**: 241. 1926.
On Pinus.
Type locality: North Carolina.
Specimen: the type. — Fig. 12.
The capitate hyphopodia are alternate, stalk cell from short to 18 μ long, head cell irregular to lobed, —18 μ in diameter. The perithecial appendages described by Dearness arise from the subiculum, not from the perithecium and are the usual radiating hyphae so commonly found at the perithecial bases; they are not setae.

No. 10. **Irenina valdiviensis** (Spegazzini) n. comb.
Meliola valdiviensis Spegazzini, Fungi Chilenses, 29, no. 49. 1910.
On Myrtaceae: Eugenia.
Type locality: Chile.

No. 11. **Irenina dalechampiae** Stevens n. sp.
Colonies punctiform, dense, 1—2 mm. in diameter. Mycelium somewhat crooked, dark, thick, 7—8 μ. Capitate hyphopodia opposite or alternate, crowded, usually less than 11 μ apart. Stalk cell short, 3—4 μ, head cell subglobose, ovate, clavate, or more rarely irregular. Mucronate hyphopodia ampulliform. Perithecial setae none. Mycelial setae none.
Perithecia globose, smooth, 150—185 μ, arising from a hypothecial disk that is nearly entire. Asci evanescent. Spores 4-septate, 36 ⩽ 14 μ.
Group number 3103. 3220. — Fig. 13.
On Euphorbiaceae: Dalechampia scandens. Ecuador, Terecita, Oct. 30, 1924, *153*; Oct. 29, 1924, *49*.

No. 12. **Irenina wrightii** (Berkeley & Curtis) n. comb.

Meliola wrightii Berkeley & Curtis, in Berkeley, Jour. Linn. Soc., London **10**: 392. 1869.

On Sapindaceae: 12, 83, Allophylus 184; on Meliaceae: 254.

Type locality: Cuba, Cuban Fungi *881*, on Sapindaceae.

Distribution: Cuba 12, 83; Brazil 184; Argentine 254.

Citations: 83*, 69*.

No. 13. **Irenina sepulta** (Patouillard) n. comb.

Meliola sepulta Patouillard in Stevens, Ill. Biol. Mono. **2**: 14. 1916.

Irene sepulta (Patouillard) Toro, Mycol. **17**: 139. 1925.

On Verbenaceae: Avicennia.

Type locality: Porto Rico, Heller *390*.

Citations: 261*, 29.

Specimen: Heller *6416*, *390*.

No. 14. **Irenina ampullifera** (Winter) n. comb.

Meliola ampullifera Winter, Rev. Mycol. **26**: 206. 1885.

Irene ampullifera (Winter) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.

On unknown host.

Type locality: Paraguay.

No. 15. **Irenina obesa** (Spegazzini) n. comb.

Meliola obesa Spegazzini, Anal. Soc. Cien. Argentina, 72, no. 179. 1883.

Meliola obesula Spegazzini, Rev. Argentina Hist. Nat. **1**: 27, no. 75. 1891.

Irene obesa (Spegazzini) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.

On Rutaceae: 226, 243, 83, 313, Helietta 249, 255, Balfourodendron 255, Zanthoxylon 331a. On Moraceae: Cecropia 184, 313. On Sapindaceae: Cupania 313. On Meliaceae: 313, 83.

Type locality: Paraguay, *3834*, on Rutaceae.

Distribution: Paraguay 236, 313, 83; Brazil 166, 184, 313, 243; Argentine 255.

Citations: 84, 83*, 263*.

Specimens: Rab., Wint. & Pazsch., Fungi europ. *3853*; Balansa *3585*, the type of *M. obesula*; the type of *M. obesa*.

No. 16. **Irenina bonplandi** (Spegazzini) n. comb.

Meliola bonplandi Spegazzini, An. Mus. Nac., Buenos Aires **23**: 39. 1912.

On Sapindaceae: Sapindus.

Type locality: Argentine, Misiones, 1909.

Citation: 255.

In the original publication the name is spelled "Bomplandi" and the collection as "prope Bompland." In later publications Spegazzini gives the specific name as "bonplandi".

New records: on Sapindaceae; Sapindus saponaria. Panama, Culebra, Oct. 2, 1924. *932*. On Sapindaceae, indet. Panama, Punta Bruja, Sept. 16, 1924, *527*, Tumba Muerta, Sept. 27, 1924, *859*, Miraflores, Sept. 15, 1924, *506*.

These specimens agree well with the description except that in two accounts of it by Spegazzini no mention is made of the occasional larviform appendages which do occur on these specimens. Perhaps these specimens should be referred to *Irene*. Study of the type might show that it also should be so referred.

No. 17. **Irenina amoena** (Sydow, H.) n. comb.

Irene amoena Sydow, H., Annal. Mycol. **24**: 315. 1926.

On Elaeocarpaceae: Sloanea faginea.

Type locality: Piedades de San Ramon, Costa Rica. *162.*

Specimen: the type.

No. 18. **Irenina laevis** (Berkeley & Curtis) n. comb.

Meliola laevis Berkeley & Curtis, Jour. Linn. Soc. London **10**: 392. 1869.

On Celastraceae: 157. On Meliaceae: Schmidelia 313.

Type locality: Cuba, on unknown host.

Distribution: Brazil 166, 313; China 157; Cuba 83, 313.

Citation: 83*.

No. 19. **Irenina uncariae** (Rehm) n. comb.

Meliola uncariae Rehm, Leafl. Philippine Bot. **6**: 2192. 1914.

On Rubiaceae: Uncaria.

Type locality: Luzon, Philippines, *1280* Baker.

Citations: 5, 301.

Specimen: Philippine Bur. Sci. *1280* (co-type).

No. 20. **Irenina aspidospermatis** (Spegazzini) n. comb.

Meliola aspidospermatis Spegazzini, An. Mus. Nac. Buenos Aires **32**: 361. 1924.

On Apocynaceae: Aspidosperma.

Type locality: Argentine.

No. 21. **Irenina aibonitensis** (Stevens) n. comb.

Meliola aibonitensis Stevens, Ill. Biol. Mono. **2**: 16. 1916.

Irene aibonitensis (Stevens) Toro, Mycol. **17**: 140. 1925.

On Thymelaeaceae: Daphnopsis.

Type locality: Porto Rico, Stevens *8470.*

Citation: 261.

The perithecia in this species long remain dimidiate, but eventually swell, becoming spherical at maturity, at least in most cases. This is obviously a transition form between *Amazonia* and the *Irene* group.

No. 22. **Irenina colubrinae** n. sp.

Colonies amphigenous, indefinite. Small, 2—3 mm., loose. Mycelium thin, 5—6 μ, translucent, straight above, slightly crooked below the leaf, sparse. Capitate hyphopodia alternate, antrorse, distant, 40—230 μ. Stalk cell short, 3—4 μ; head cell regular, globose, or slightly elongate, 14 μ. Mucronate hyphopodia ampulliform, 14 × 7 μ, short, thick.

Perithecial and mycelial setae none. Perithecia globose, developed on a disk, nearly transparent, 140—110 μ, rough with conic prominences,

11 μ high and broad at base. Asci evanescent. Spores 4-septate, 32—39 ⩽ 14 μ.

Group number 3101. 3220. — Fig. 14.

On Rhamnaceae: Colubrina rufa. Panama, France Field, Sept. 2, 1924, *173*, Fort Lorenzo Trail, Oct. 10, 1924, *1197*.

The very scant mycelium with distant hyphopodia and the very abundant perithecia are the most characteristic features.

No. 23. **Irenina cyclopoda** (Stevens) n. comb.

Meliola cyclopoda Stevens, Ill. Biol. Mono. **2**: 16. 1916.

Irene cyclopoda (Stevens) Toro, Mycol. **17**: 140. 1925.

On Compositae: Pseudelephantopus.

Type locality: Porto Rico, Stevens *7871*.

Citations: 261*, 215*.

New records: on Compositae; Elephantopus, British Guiana, Kartabo, July 23, 1922, *575*. On Piperaceae; Piper, British Guiana, Tumatumari, July 12, 1922, *159*; Trinidad, Cumuto, Aug. 16, 1922, *877*.

No. 24. **Irenina monninae** n. sp.

Colonies epiphyllous, minute, 1 mm. or less, thin, scattered. Mycelium sinuous. Capitate hyphopodia alternate, stalk cell short, 3—4 μ; head cell globose, 11 μ, mucronate hyphopodia ampulliform, 14—18 ⩽ 8 μ.

Perithecial setae none. Mycelial setae none. Perithecia globose, smooth, or with low conic roughenings, 60—170 μ, originating on a radiate subicle. Asci evanescent. Spores 4-septate, 28—36 ⩽ 11 μ.

Group number 3101. 3220. — Fig. 20.

On Polygalaceae: Monnina rupestris. Ecuador, Terecita, Oct. 29, 1924, *50*.

No species has heretofore been recorded upon the Polygalaceae.

No. 25. **Irenina marcgraviae** (Tehon) n. comb.

Meliola marcgraviae Tehon, Bot. Gaz. **67**: 506. 1919.

Irene marcgraviae (Tehon) Stevens & Tehon, Mycol. **18**: 22. 1926.

On Marcgraviaceae: Marcgravia.

Type locality: Porto Rico, Stevens *8722*.

Distribution: British Guiana 266; Porto Rico 309; Costa Rica 277a.

Specimen: the type.

No. 26. **Irenina alchorneae** (Stevens & Tehon) n. comb.

Irene alchorneae Stevens & Tehon, Mycol. **18**: 21. 1926.

On Euphorbiaceae: Alchornea.

Type locality: British Guiana, Stevens *245*.

Citation: 266*.

No. 27. **Irenina shropshiriana** n. sp.

Colonies minute, 1—2 mm., epiphyllous, closely adherent. Mycelium opaque, dark, nearly straight, 7 μ thick, branching opposite. Capitate hyphopodia alternate. Stalk cell short, 3—6 μ; head cell subglobose, regular, 14 μ. Mucronate hyphopodia ampulliform, 18 ⩽ 7 μ.

Perithecial setae none. Mycelial setae none. Perithecia globose, smooth, small, 100—110 μ, borne on a radiate disk. Asci evanescent. Spores 4-septate, 43 ⩽ 14 μ.

Group number 3101. 4220. — Fig. 15.

On Melastomataceae: Miconia argentea. Panama, Fort Sherman Sweetwater, Oct. 6, 1924, *1083* (type), France Field, Sept. 2, 1924, *212*, Oct. 3, 1924, *1005*, Ft. Lorenzo Trail, Oct. 10, 1924, *1150*, Ft. Randolph, 100 feet hill trail, Sept. 23. 1924, *747*, *767*, Barro Colorado, Aug. 29, 1924, *581*, Paitilla Pt., Sept. 8, 1924, *341*, Tapia, Aug. 15, 1923, *1043*, *1008*.

This species is distinguished by its small, closely adhering colony and its globose, capitate hyphopodia from both *I. melastomacearum* and *I. conostegiae*.

No. 28. **Irenina plebeja** (Spegazzini) n. comb.

Meliola plebeja Spegazzini, Bol. Acad. Nac. Cien. Cordoba **11**: 238. 1889.

Irene plebeja (Spegazzini) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.

On Solanaceae: 242, 184, 243, 313, 83, 84, 331a, Acnistus 255. On Rubiaceae: 184, 313. On Bignoniaceae: Amphilophium 191.

Type locality: Apiahy, Brazil, *2759*, on Solanaceae (?).

Distribution: Brazil 242, 83, 184, 191, 243, 313; Paraguay 84; Argentine 255; Santo Domingo 331a.

Citations: 84*, 242.

Specimen in Rehm, Ascom. *1024* sub *M. plebeja* is *M. armata* Speg.

No. 29. **Irenina plebeja** (Spegazzini) Stevens var. **asperrima** (Spegazzini) n. comb.

Meliola plebeja Spegazzini var. *asperrima* Spegazzini, Bol. Acad. Nac. Cien. Cordoba **11**: 239. 1889.

On Solanaceae: 242, Physalis 9.

Type locality: Apiahy, Brazil, *1551*.

No. 30. **Irenina laeta** (Theißen) n. comb.

Meliola laeta Theißen, Broteria **12**: 24. 1914.

On Solanaceae; Physalis.

Type locality: Brazil.

Citation: 320*.

No. 31. **Irenina solanicola** (Hennings) n. comb.

Meliola solanicola Hennings, Engler's Bot. Jahrb. **28**: 326. 1901 (not *Meliola solanicola* Gaillard).

Meliola henningsii Beeli, Bul. Jard. Bot. Bruxelles **7**: 100. 1920.

On Solanaceae: Solanum, 95, Physalis, 9.

Type locality: Usambara, Africa.

No. 32. **Irenina portoricensis** (Toro) n. comb.

Irene portoricensis Toro, Mycol. **17**: 141. 1925.

On Solanaceae: Acnistus.

Type locality: Porto Rico.

No. 33. **Irenina conglomerata** (Winter) n. comb.

Meliola conglomerata Winter, Hedw. **25**: 95. 1886.

On unknown host.

Type locality: St. Thomas, Africa.

Citation: 348*.

No. 34. **Irenina parasitica** n. sp.

Colonies epiphyllous, irregular, 2—5 mm. in diameter. Mycelium branching opposite. Spot larger than the colony, pale at border, browned at center, visible only from above. Capitate hyphopodia alternate. Stalk cell short, 3—4 μ; head cell subglobose to pyriform, about 15 μ in diameter. Mucronate hyphopodia not seen.

Perithecial setae none. Mycelial setae none. Perithecia globose, smooth, 90 μ. Asci evanescent. Spores 4-septate, 36—39 ⩽ 14 μ.

Group number: 3101. 3210. — Fig. 16.

On Zingiberaceae: Costus. Ecuador, Terecita, Oct. 31, 1924. *194.*

This species is peculiar in being epiphyllous, in its irregular colonies and particularly in its parasitism. The colony causes a pale spot that is about two millimeters greater in diameter than the colony itself and there is considerable evidence of physiological disturbance.

No. 35. **Irenina meibomiae** n. sp.

Colonies epiphyllous, irregular, indefinite, 2—4 mm. in diameter. Mycelium 7 μ thick, slightly sinuous. Capitate hyphopodia alternate, distant, 36—90 μ. Stalk cell short, 3—4 μ; head cell globose or ovate, 11 ⩽ 14 μ. Mucronate hyphopodia ampulliform, 11—14 ⩽ 7 μ.

Perithecial setae none. Mycelial setae none. Perithecia globose, somewhat rough with conic thickenings, originating on a radiate disk, 80—110 in diameter. Asci evanescent. Spores 4-septate, 32—36 ⩽ 11—14 μ.

Group number 3101—3220. — Fig. 17.

On Leguminosae: Meibomia cana. Panama, France Field, Sept. 2, 1924, *1213.*

This species is distinguished from *Meliola lonchocarpi* Speg. by its capitate hyphopodia; from *Irenina gesuitica* by the hypothecial disks; from *I. cubitella* and *I. cubitorum* by mycelial characters; from *Meliola ingaeicola* Speg. by hyphopodia and colony characters.

No. 36. **Irenina obscura** n. sp.

Colonies epiphyllous, indefinite, 3—8 mm. in diameter. Mycelium 7 μ thick, nearly straight, branching mostly opposite. Capitate hyphopodia alternate. Stalk cell short, 3—4 μ; head cell subglobose to ovate, regular, 14—18 ⩽ 11—14 μ. Mucronate hyphopodia ampulliform, numerous, 14—18 ⩽ 7 μ.

Perithecial setae none. Mycelial setae none. Perithecia globose, originating on a radiating subicular disk, 123—154 μ, rough with rounded protuberances 14 μ high, 14 μ broad at base. Asci evanescent. Spores 4-septate, 32—36 ⩽ 15—16 μ.

Group number 3101. 3220. — Fig. 18.

On Dilleniaceae indet. Panama, Corozal, Trail 17, Aug. 30, 1924, *76*, and *117* (type). On Saurauia. Peru, Chosica, Dec. 13, 1924, *228*.

This is quite distinct from *I. papillifera* in many ways.

No. 37. **Irenina irregularis** (Stevens) n. comb.

Meliola irregularis Stevens, Ill. Biol. Mono. **2**: 15. 1916.

Irene irregularis (Stevens) Toro, Mycol. **17**: 139. 1925.

On Acanthaceae: Hygrophila.

Type locality: Porto Rico, Stevens *9283*.

Citations: 261*, 215*.

No. 38. **Irenina aucubae** (Hennings) n. comb.

Meliola aucubae Hennings, Engler's Bot. Jahrb. **29**: 150. 1901.

On Cornaceae: Aucuba.

Type locality: Japan.

Citation: 153.

Specimen: the type.

The spores in this type specimen measured 47—50 ⩽ 18—20 μ.

No. 39. **Irenina penicilliformis** (Gaillard) n. comb.

Meliola penicilliformis Gaillard, Le Gen. Mel. 57. 1892.

On Rubiaceae: Psychotria.

Type locality: Amazon.

Citation: 83*.

No. 40. **Irenina buddleyicola** (Hennings) n. comb.

Meliola buddleyicola Hennings, Hedw. **44**: 61. 1904.

On Loganiaceae: Buddleya.

Type locality: Amazon, Ule *3187*.

Specimens: type, Ule, Myc. Brasil. *56*.

The colonies are small, 1—2 mm., the mycelial branching mainly at right angles and the mycelium very crooked and characteristic.

New record: On Buddleia intermedia. Ecuador, Terecita, Oct. 29, 1924, *179*.

No. 41. **Irenina hyptidicola** (Stevens) n. comb.

Meliola hyptidicola Stevens, Ill. Biol. Mono. **2**: 16. 1916.

Irene hyptidicola (Stevens) Toro, Mycol. **17**: 139. 1925.

On Labiatae: Hyptis.

Type locality: Porto Rico, Stevens *8130*.

Distribution: Porto Rico 261, 331; Costa Rica 277a; Santo Domingo 331a.

Citation: 261*.

New record: On Labiatae: Hyptis. Ecuador, Barrnital Nov. 17, 1924, *310*, Terecita, Oct. 29, 1924. *171*, Costa Rica, Siquirres, July 31, 1923, *672*, Peralta, July 13, *418*, *420*.

No. 42. **Irenina hyptidicola** (Stevens) Stevens var. **wombalensis** (Beeli) n. comb.

Meliola hyptidicola Stevens var. *wombalensis* Beeli, Bul. Jard. Bot., Bruxelles **7**: 95. 1920.

On Labiate: Hyptis.

No. 53. **Irenina fagaricola** (Spegazzini) n. comb.

Meliola fagaricola Spegazzini, An. Mus. Nac. Buenos Aires **32**: 352. 1924.

On Rutaceae: Fagara.

Type locality: Argentine.

No. 54. **Irenina sandorici** (Rehm) n. comb.

Meliola sandorici Rehm, Philippine Jour. Sci., C. Bot. **8**: 391. 1913.

On Meliaceae: Sandoricum.

Type locality: Luzon, Philippines, Baker *743*.

Citations: 4, 301.

Specimens: Sydow, Fung. Exot. Exs. *380*. Baker, Fungi Mal. *368*. Philippine Bur. Sci. *1234*.

No. 55. **Irenina costi** n. sp.

Colony epiphyllous, 3—12 mm. in diameter, black, irregular. Mycelium tending to be straight and right-angled. Capitate hyphopodia alternate. Stalk cell short, 3—6 μ; head cell regular, ovoid to cylindrical, 14 ⩽ 10 μ. Mucronate hyphopodia ampulliform, 8 ⩽ 25 μ.

Perithecial setae none. Mycelial setae none. Perithecia globose, 155—185 μ, smooth. Asci evanescent. Spores 4-septate, 40—43 ⩽ 16—18 μ.

Group number 3101. 4220. — Fig. 19.

On Zingiberaceae: Costus sp. Panama, Brazos Brook Reservoir, Sept. 22. 1924, *728a*.

The specimen is heavily overgrown by parasites and on the lower side of the same leaves is another species of the Meliolineae.

No. 56. **Irenina aracearum** n. sp.

Colonies hypophyllous, small, 1—2 mm., circular. Mycelium close, straight, regular. Spot definite, about equalling the colony in size, brown. Capitate hyphopodia mostly alternate, crowded, 14 μ apart. Stalk cell short, 3—4 μ; head cell oblong, 15 ⩽ 7 μ, often bent. Mucronate hyphopodia ampulliform.

Perithecial setae and mycelial setae none. Perithecia globose, smooth, 100—110 μ. Spores 4-septate, 36—39 ⩽ 14 μ, constricted.

Group number 3101—3220.

On Araceae: Dieffenbachia longispatha. Panama, Tapia, Aug. 15, 1923, *1021*.

This species is noteworthy as the only one of the *Irene* group on the Araceae; indeed but very few have been recorded upon Monocotyledonous plants. It is also noteworthy on account of its distinctly parasitic nature.

No. 57. **Irenina laguncularíae** (Earle) n. comb.

Meliola laguncularíae Earle, Muhl. **1**: 11. 1901.

Irene laguncularíae (Earle) Toro, Mycol. **17**: 141. 1925.

Amazonia laguncularíae (Earle) Ryan, Mycol. **18**: 107. 1926.

On Combretaceae: Laguncularia.

Type locality: Porto Rico, Heller *4361a*.

Citations: 261*, 215*.

e conic roughenings in this species approach the structure of larvi- appendages.

ecimen: Heller *6417*.

w records: On Laguncularia. Panama, Fort Lorenzo trail, Oct. 10, *1050*. Ft. Sherman, Sweetwater, Oct. 6, 1924, *1051*. The colony ese specimens is larger and the capitate hyphopodia are somewhat er and thicker, than in the type.

ough placed by Miss Ryan in *Amazonia* on account of its mode of opment, since the mature perithecium is globose I refer it to *Irenina*.

58. **Irenina longipoda** (Gaillard) n. comb.

liola longipoda Gaillard, Bul. Soc. Mycol. France **8**: 178. 1892.

liola usteriana Rehm, Annal. Mycol. **5**: 523. 1907.

ne longipoda (Gaillard) Toro, Mycol. **17**: 141. 1925.

Boraginaceae: Cordia 261, 29, 255, 331, 188; Tournefortia 84, 163, 261; nia 331. On Anonaceae: Anona 261. On Verbenaceae: Citharexylum 331 a.

pe locality: Banos, Ecuador, on Tournefortia.

tribution: Ecuador 84, 163; Argentine 255; Porto Rico 29, 261; Brazil 188; Domingo 331 a.

ations: 84*, 261*, 215*.

ecimens: Rehm, Ascom. *1875*.

w records: — On Borraginaceae: Cordia heterophylla.

nama, Corozal, Trail 17, Aug. 30, 1924, *132*, Chiva-Chiva trail, Sept. 924, *614*, Ft. Lorenzo Trail, Oct. 10, 1924, *1167*, Las Cruces trail, 2, 1924, *139*, Ft. Randolph, 100 feet hill trail, Sept. 23, 1924, *757*, Vista, Oct. 7, 1924, *1118*, Paitilla Pt., Sept. 8, 1924, *368*.

59. **Irenina heudeloti** (Gaillard) n. comb.

liola heudeloti Gaillard, Le Gen. Mel. 49, 1892.

ne heudeloti (Gaillard) Doidge, So. African Jour. Nat. Hist. **2**: 40. 1920.

Melastomaceae: Memecylon 83, 8. On Loganiaceae: Nuxia 45, 53, 8b. On Verbenaceae: Clerodendron 51.

pe locality: Senegambia, Heudelot in year 1837, on Memecylon.

tribution: Senegambia 83; India 8; South Africa 45; 51; 18, 18b.

ations: 83*; 45*, 8*.

ecimen: Doidge *1776*.

e specific name was originally spelled as above but in many recent ngs the "u" has been changed to "n". Due to the kindness of rnaud I am informed that the type specimen bears two old labels referring to M. Heudelot as the collector during his voyage in gambia in 1837.

l and Dutta (8) state that the perithecia have larviform appendages, o other report agrees in this.

60. **Irenina melastomacearum** (Spegazzini) n. comb.

liola melastomacearum Spegazzini, Bol. Acad. Nac. Cien. Cordoba **11**: 495, 32. 1889.

Irene melastomacearum (Spegazzini) Toro, Mycol. **17**: 142. 1925.

On Melastomataceae: 242, 83, 184, Clidemia 261, 331, 331a, Miconia 261, 29, 331.

Type locality: Apiahy, Brazil *2485*.

Distribution: Brazil 242, 83, 184; Porto Rico 261, 29, 331; Santo Domingo 331a.

Citations: 263*, 261*, 215.

Specimen: the type.

New records: — On Melastomataceae: Arthrostemma campanulare. Ecuador, Terecita, Oct. 30, 1924, *154;* on Clidemia hirta. Ecuador, Terecita, Oct. 29, 1924, *67*, Oct. 39, 1924, *164*; Costa Rica, Siquirres, July 31, 1923, *686*, Port Limon, Aug. 9, 1923, *820*, *828*. On Clidemia neglecta. Panama, Ft. Sherman, Sweetwater, Oct. 6, 1924, *1089*, *1095*.

On Clidemia sp. British Guiana, Tumatumari, July 10, 1922, *144*, Coverdon, Aug. 8, 1922, 761; Costa Rica, Port Limon, Aug. 10, 1923, *874*. On Miconia lacera. Panama, New Limon, Oct. 4, 1924, *1034*; Ft. Lorenzo Trail, Oct. 10, 1924, *1177*. On Melastomataceae indet. Panama, Chagres, 2—3 miles of Mouth, Aug. 23, 1923, *1313*, Culebra, Oct. 2, 1924, *926*; Costa Rica, Experiencia Farm, July 18, 1923, *522*, *523*, Columbiana, July 19, 1923, *567*, Siquirres, July 30, 1923, *658*; July 31, 1923, *682*.

No. 61. **Irenina strophanthi** (Doidge) n. comb.

Meliola strophanthi Doidge, Trans. Roy. Soc. So. Africa **5**: 729. 1917.

Irene strophanthi (Doidge) Doidge, So. African Jour. Nat. Hist. **2**: 41. 1920.

On Apocynaceae: Strophanthus.

Type locality: Natal, South Africa Doidge *1781*.

Citations: 45*, 18b.

Specimen: Doidge *1781* (type).

No. 62. **Irenina escharoides** (Sydow, H.) n. comb.

Irene escharoides Sydow, H., Annal. Mycol. **24**: 316. 1926.

On Apocynaceae: Tabernaemontana.

Type locality: San Pedro de San Ramon, Costa Rica *393a*.

Specimen: the type.

No. 63. **Irenina prunicola** (Spegazzini) n. comb.

Meliola prunicola Spegazzini, An. Mus. Nac. Buenos Aires **32**: 353. 1924.

On Rosaceae: Prunus.

Type locality: Argentine.

No. 64. **Irenina isertiae** n. sp.

Colony indefinite, diffuse, 1—10 mm., amphigenous. Mycelium sinuous, 6 μ thick. Capitate hyphopodia alternate, antrorse. Stalk cell short, 3—6 μ; head cell elliptical, 14 ⩽ 7 μ, sometimes slightly irregular or truncate. Mucronate hyphopodia ampulliform, 14—21 ⩽ 5—6 μ.

Perithecial setae none. Mycelial setae none. Perithecia globose, slightly rough, 140—150 μ, borne on disks. Asci evanescent. Spores 4-septate, 32—36 ⩽ 15 μ.

Group number 3101. 3220. — Fig. 20.

On Rubiaceae: Isertia haenkeana. Panama, France Field, Sept. 2, 1924, *220*, Oct. 3, 1924, *982*, Agua Clara Reservoir, Sept. 17, 1924, *552*, Ft. Randolph, 100 feet hill trail, Sept. 23, 1924, *764*, New Limon, Oct. 4, 1924, *1013*, Bella Vista, Oct. 7, 1924, *1112*, Ft. Lorenzo Trail, Oct. 10. 1924, *1149*, Mandingo, Oct. 15, 1924, *1354*. On Psychotria sp. Panama, France Field, Sept. 2, 1924, *172*. On unknown host. Panama, France Field, Oct. 3, 1924, *1008*, Ft. Sherman, Sweetwater, Oct. 6, 1924, *1092*; Peru: Huacapistana, Dec. 6, 1924, *78*.

There rarely occur ascending branches (up to 300 μ long) that appear quite like the mycelium except that they rise from the leaf and are almost devoid of hyphopodia. They are not of the nature of setae, and the few hyphopodia that they bear attest to their mycelial character. Occasional mycelial branches appressed to the leaf are almost devoid of hyphopodia.

This form differs from *I. glabra* in not having a crustose colony; from *I. plebeja* in the shape of its capitate hyphopodia. The numerous epiphyllous colonies are so heavily parasitized as to be sterile and to render certain determination impossible, but they apparently belong to this same species. Nos. *1008*, *1354*, *1112*, and *220* bore only such epiphyllous colonies.

No. 65. **Irenina cubitella** (Stevens & Tehon) n. comb.

Irene cubitella Stevens & Tehon, Mycol. **18**: 18. 1926.

On Leguminosae: Cassia.

Type locality: British Guiana, Stevens *193*.

Distribution: Trinidad, British Guiana.

Citation: 266*.

No. 66. **Irenina glabra** (Berkeley & Curtis) n. comb.

Meliola glabra Berkeley & Curtis, Jour. Linn. Soc. London **10**: 392. 1869.

Irene glabra (Berkeley & Curtis) Doidge, So. African Journ. Nat. Hist. **2**: 41. 1924.

Irene glabra (Berkeley & Curtis) Toro, Mycol. **17**: 139. 1925.

On Rubiaceae: 12, 254; Canthium 83, 53, 45, 16, 18b; Palicourea 16, 254. On Solanaceae: 166, 83, 184. On Malpighiaceae: 166. On Palmae 217. On Compositae: Mikania 166, 184. On Verbenaceae: Stachytarpheta 83, Verbena 166; 184. On Velloziaceae: Barbacenia 166, 174. On Boraginaceae: 184; 331. On Anonaceae: 184. On Scrophulariaceae: 184. On Taxaceae: Podocarpus 184. On Sapindaceae: Hypelate 261, 254. On Euphorbiaceae: Drypetes 261. On Piperaceae 184, 331.

Type locality: Cuba, on Rubiaceae.

Distribution: South Africa 53, 45, 18b; Cuba 12, 83, 254, 16; Brazil 166; 83; 184; 334; Porto Rico 261, 331; Argentine 254.

Citations: 12, 32, 217, 83*, 69*, 45*, 261*, 255.

Specimens: Rab., Wint. & Pazsch., Fungi europ. *3849*; Doidge *1780*; Heller *4359a*; Wright, Cuba, No. 2171.

Erroneously reported as this species was a fungus on a Rubiaceous host, later regarded as an *Asterina* (217).

New records: — On Sapindaceae: Ecuador, Terecita, Oct. 29, 1924, 81.

No. 67. **Irenina hymenaeicola** (Frag. & Cif.) n. comb.

Meliola hymenaeicola Frag. & Cif., Bol. Soc. Esp. Nat. Hist. **26**: 471. 1926.

On Leguminosae: Hymenaea courbaril.

Type locality: Dominica, Ciferri *25—V.*

Citation: 29 f*.

No. 68. **Irenina tomentosa** (Winter) n. comb.

Meliola tomentosa Winter, Rev. Mycol. **7**: 206. 1885.

Irene tomentosa (Winter) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.

On Styracaceae: Styrax 313. On Rutaceae: Zanthoxylon 313.

Type locality: Paraguay, on unknown host.

Citations: 83*, 313, 203.

Specimens: Rick, Fg. aust.-amer. *67.*

No. 69. **Irenina aberrans** n. sp.

Meliola tomentosa Winter var. *calva* Rehm, Annal. Mycol. **5**: 209. 1907.

Type locality: Brazil, on Styrax.

Specimen: the type of *M. tomentosa* var. *calva* from Dahlem, Ascom. no. *1707*; Rick, Fung. aust.-amer. *67.*

This variety was made by Rehm with the statement that hyphopodia "sind nicht aufzufinden".

The mycelium is thin, very irregular. Hyphopodia darker than the mycelium, irregularly angular, small, mostly 7 ⩽ 14 μ; spores 4-septate, 39—43 ⩽ 14—16 μ; perithecia —350 μ, very rough.

This species is very characteristic and distinct and quite different from *I. tomentosa*. What appear to be strands of erect aerial non-hyphopodiate mycelium occasionally occur but they are not setae.

No. 70. **Irenina nigra** Stevens n. sp.

Colonies crustose, epiphyllous, black, punctiform, 1—2 mm. Mycelium dark, crooked, 7—8 μ thick. Capitate hyphopodia alternate, crowded. Stalk cell short, 3—4; head cell subglobose, 14 μ, to obovate, 18 ⩽ 14 μ, sometimes slightly lobed. Mucronate hyphopodia ampulliform, 18 μ long, base globose, neck straight.

Perithecial setae none. Mycelial setae none. Perithecia globose, rough with rounded projections, 123—170 μ. Asci evanescent. Spores 4-septate, 32—36 ⩽ 14 μ.

Group number 3101. 3220, — Fig. 21.

On unknown Cucurbitaceous host. Costa Rica, Peralta, July 11, 1923, *312.*

No. 71. **Irenina clidemiae** n. sp.

Colony epiphyllous, black, circular, 1—3 mm. in diameter. Mycelium close, slightly but distinctly crooked, branches mostly at acute angles. Spot equal to the colony in size, visible through to the lower side of the leaf.

Capitate hyphopodia alternate, numerous. Stalk cell short, 3—5 μ; head cell ovate, pyriform, or sometimes irregular, 11—15 ⩽ 7—8 μ. Mucronate hyphopodia narrow, crooked.

Perithecial setae none. Mycelial setae none. Perithecia smooth, globose, 200 μ. Asci 2-spored, evanescent. Spores 4-septate. 36—39 ⩽ 11—13 μ, strongly constricted.

Group number: 3101. 3220. — Fig. 22.

On Melastomataceae: Clidemia sp. British Guiana, Rockstone, July 13, 1922, *254*; Trinidad, Cumuto, Aug. 16, 1922, *912*.

Two species of the formula 3103. are listed on the Melastomataceae, *I. melastomacearum* Speg. and *I. heudelotii* Gail. From the latter the present species is distinguished by its smaller spores; from the former by its crooked mycelium and by the shape of the capitate hyphopodia. The present form is also distinctly parasitic which is not true of the other two.

No. 72. **Irenina glabroides** (Stevens) n. comb.

Meliola glabroides Stevens, Ill. Biol. Mono. **2**: 18. 1916.

Irene glabroides (Stevens) Toro, Mycol. **17**: 142. 1925.

On Piperaceae: Piper 261. On Guttiferae: Rheedia 251, Vismia 266. On Lauraceae: Nectandra 261, 331, 266. On Burseraceae: Icica 266. On Simarubaceae: Simaruba 261, Simaba 266. On Ochnaceae: Sauvagesia 261, 331, 29, 266. On Verbenaceae: Stachytarpheta 266, 261, Valerianodes 331. On Solanaceae: Solanum 261, Physalis 9. On Anonaceae: 266. On Meliaceae: 9. On Sapindaceae, Cupania 277a.

Type locality: Porto Rico, on Piperaceae, Piper. — Fig. 23.

Distribution: Trinidad 266; Porto Rico 261, 331, 29; Costa Rica 251, 277a. British Guiana 266; Trinidad 266.

Citation: 261*.

The fungi roported under this name on such wide host range doubtless, with sufficient study, could be separated into numerous and well defined varieties.

New records: — On Piperaceae: Piper sp. Costa Rica, La Palma, July 8, 1923, *303*. On Piper breve. Panama, France Field, Oct. 3, 1924, *1001*, Brazos Brook Reservoir, Sept. 22, 1924, *752*, Tapia, Aug. 15, 1923. On Piper villiramulum. Panama, Corozal, Trail 17, Aug. 30, 1924, *116*, *117*, Ft. Sherman, Sweetwater, Oct. 6, 1924, *1091*. On Piper (persubulatum)?. Panama, Ft. Sherman, Swetwater, Oct. 6, 1924, *1076*. These specimens all agree closely with the type material collected in Porto Rico. To the original description may be added that the perithecia rest upon a radiate subicle, poorly developed. Figures are published herewith of this species taken from the type material.

On Verbenaceae: Stachytarpheta. Ecuador, Terecita, Oct. 29, 1924, *157*; Trinidad. St. Claire Aug. 15, 1922, *879*; British Guiana, Kartabo, July 21, 1922, *496*, Tumatumari, July 10, 1922, *129*, Demarrara-Essequibo R. R., July 15, 1922, *392*. On Citharexylum caudatum. Panama, France Field,

Oct. 3, 1924, *979*. On Moraceae: Olmedia aspera. Panama, Ft. Sherman, Sweetwater, Oct. 6, 1924, *1065*, *1068*.

The perithecial subicles in this collection seem to show slight differences between this and *I. glabroides* and in view of its host relation it should perhaps be regarded as a separate species.

On Rutaceae: Casimiroa tetrameria. Costa Rica, El Alto, July 6, 1923, *233*. The colonies appear quite the same as in the type material except that they are more scattered and the mycelial strands are slightly tortuous, whereas those of the type are relatively straight. On unknown species of the Araliaceae. British Guiana, Rockstone, July 13, 1922, *219*. This specimen agrees well with the type material except that the mycelium is somewhat more crooked and more compact in growth habit,

No. 73. **Irenina glabroides** (Stevens) Stevens var. **schlegeliae** (Stevens) n. comb.

Meliola glabroides Stevens var. *schlegeliae* Stevens, Ill. Biol. Mono. **2**: 20. 1916.

On Bignoniaceae: Schlegelia.

Type locality: Porto Rico, Stevens *8289*.

No. 74. **Irenina anguriae** n. sp.

Colony epiphyllous, diffuse, indefinite, large, 1—10 mm., black. Mycelium not crooked, 5—8 μ thick. Capitate hyphopodia alternate, antrorse, retrorse or perpendicular, 28—65 μ apart. Stalk cell short, 3—7 μ; head cell ovoid or slightly irregular or lobed, 18 × 11 μ. Mucronate hyphopodia ampulliform.

Perithecial setae none. Mycelial setae none. Perithecia globose when mature, 130 μ in diameter, rough with rounded conic protuberances 7 μ high, flat and radiate when young, on disks. Asci evanescent. Spores 4-septate, 39—41 × 14 μ.

Group number 3101. 4220. — Fig. 24.

On Cucurbitaceae: Anguria sp. British Guiana, Tumatumari, July 11, 1922, *205* (type); on unknown Cucurbitaceae. Panama, Gatun, Sept. 26, 1924, *834*, Empire, Oct. 8, 1924, *1136*; Costa Rica, Port Limon, Aug. 10, 1923, *854*.

This species differs from *I. triloba* Wint. in the shape of the capitate hyphopodia and from *I. confragosa* Syd. in character of colony, size of spores and other characters.

No. 75. **Irenina scabra** (Doidge) n. comb.

Meliola scabra Doidge, Trans. Roy. Soc. So. Africa **7**: 194. 1919.

Irene scabra (Doidge) Doidge, So. African Jour. Nat. Hist. **2**: 40. 1920.

On Hamamelaceae: Trichocladus.

Type locality: Natal, South Africa, Emmett *9064*.

Citation: 46*.

Specimen: Union *9262* (compared with type).

No. 76. **Irenina calva** (Spegazzini) n. comb.

Meliola calva Spegazzini, Bol. Acad. Nac. Cienc. Cordoba **11**: no. 233. 1889.

On Lauraceae: 242, 83, Nectandra 255, Ocotea 255.
Type locality: Apiahy, Brazil. 1881 no. 1483—1507.
Distribution: Brazil 242, 83; Argentine 255.
Citations: 263*, 255.
Specimen: the type.

No. 77. **Irenina perseae** (Stevens) n. comb.
Meliola perseae Stevens, Ill. Biol. Mono. **2**: 17. 1916.
Irene perseae (Stevens) Toro, Mycol. **17**: 140. 1925.
On Lauraceae: Persea.
Type locality: Porto Rico, Stevens *8212*.
Citations; 261*.

Contrary to the opinion expressed by Spegazzini this is quite distinct from *I. calva*, particularly in its very irregular, crooked mycelium and its irregular hyphopodia.

No. 78. **Irenina cyrtandrae** (Stevens) n. comb.
Irene cyrtandrae Stevens, Bish. Mus. Bul. **19**: 44. 1925.
On Gesneriaceae: Cyrtandra.
Type locality: Kauai, Hawaiian Islands, Stevens *481*.
Citation: 264*.

No. 79. **Irenina implicata** (Doidge) n. comb.
Irene implicata Doidge, Both. **1**: 206. 1924.
On Loganiaceae: Chilianthus.
Type locality: Natal, South Africa, Doidge *17251*.
Citation: 56*.

No. 80. **Irenina confragosa** (Sydow, H. & P.) n. comb.
Meliola confragosa Sydow, H. & P., Leafl. Phillippine Bot. **5**: 1536. 1912.
Irene confragosa (Sydow, H. & P.) Sydow, H. & P., Annal. Mycol. **15**: 195. 1917.
On Cucurbitaceae: Trichosanthes 294, 4, Luffa 4, 301.
Type locality: Palawan, Philippines *12625*.
Citation: 294.
Specimens: the type, Phil. Bur. Sc. *8606*.

No. 81. **Irenina combreti** n. sp.

Colonies epiphyllous, irregular, 1—4 mm. in diameter, black. Mycelium crooked, pale. Capitate hyphopodia alternate. Stalk cell short, 3—4 μ; head cell ovate to irregular. Mucronate hyphopodia ampulliform.

Perithecial setae none. Mycelial setae none. Perithecia globose, smooth, —110 μ, from alveolar disks. Asci evanescent. Spores 4-septate, 43 ⩽ 18 μ.

Group number 3101. 4220. — Fig. 25.

On Combretaceae: Combretum farinosum. Panama, Culebra, Oct. 2, 1924. *952*.

No. 82. **Irenina longipedicellata** n. sp.

Colonies hypophyllous, indefinite, black, dense, 3—12 mm. in diameter. Mycelium very crooked, black, densely woven. Capitate hyphopodia alternate.

Stalk cell long, 14—18—36 μ; head cell large, 18—22 ⩽ 10—14 μ, very irregular, from ovate to cylindrical to variously angled. Mucronate hyphopodia few.

Perithecial setae none. Mycelial setae none. Perithecia globose, smooth, 180 μ in diameter. Spores 4-septate, strongly constricted, 36 ⩽ 12 μ.

Group uumber 3101. 3220. — Fig. 26.

On Dilleniaceae. British Guiana, Kartabo, July 24, 1922, *672*.

The capitate hyphopodia in this form are most ramarkable in their size and variability, especially in the length of the stalk cell which in one case was seen to be 86 μ long, and resembled a hypha except that it was straight not crooked as is the usual mycelium. Though this species is here recorded as devoid of mycelial setae there are occasional short simple mycelial endings that somewhat resemble setae and perhaps should be so regarded.

No. 83. **Irenina lagerheimii** (Gaillard) n. comb.

Meliola lagerheimii Gaillard, Le Gen. Mel. 49. 1892.

Irene lagerheimii (Gaillard) Theißen & Sydow, Annal. Mycol. **15**: 461. 1916.

On Aquifoliaceae: Ilex.

Type locality: Quito, Ecuador.

Citations: 181, 83*, 162.

Specimen: Rehm, Ascom. *1048*.

No. 84. **Irenina cheirodendronis** (Stevens) n. comb.

Irene cheirodendronis Stevens, Bisp. Mus. Bul. **19**: 44. 1925.

On Araliaceae: Cheirodendron.

Type locality: Kauai, Hawaiian Islands, Stevens *1165*.

Citation: 264*.

No. 85. **Irenina trachylaena** (Sydow, H.) n. comb.

Irene trachylaena Sydow, H., Annal. Mycol. **24**: 318. 1926.

On Rutaceae: Zanthoxylum elephantiasis.

Type locality: San Ramon, Costa Rica, *114*.

Specimen: the type. Fig. 27.

New record: On Rutaceae: Zanthoxylum limoncello. Costa Rica, Cartago, July 2, 1923, *184*

The dense, crustose colony and the very irregular capitate hyphopodia are characteristic.

No. 86. **Irenina cubitorum** (Stevens & Tehon) n. comb.

Irene cubitorum Stevens & Tehon, Mycol. **18**: 19. 1926.

On Leguminosae: Dimorphandra.

Type locality: British Guiana, Stevens *810*.

Citation: 266*.

No. 87. **Irenina subapoda** (Sydow, H. & P.) n. comb.

Meliola subapoda Sydow, H. & P., Annal. Mycol. **12**: 547. 1914.

On Euphorbiaceae: Mallotus.

Type locality: Bulacan, Philippines, Bur. Sc. *21824*.

Specimen: the type.

The hyphopodia are of such character that they suggest strong relationship with *Meliolina*.

No. 88. **Irenina ditricha** (Kalchbrenner & Cooke) n. comb.

Asterina ditricha Kalchbrenner & Cooke, Grev. **9**: 32. 1880.

Meliola ditricha (Kalchbrenner & Cooke) Doidge, Trans. Roy. Soc. So. Africa **5**: 728. 1817.

Irene ditricha (Kalchbrenner & Cooke) Doidge, So. African Jour, Nat. Hist. **2**: 41. 1920.

On Celastraceae: Celastrus 127, 45, 51, Pleurostylia 51, Gymnosporia 9. On Oleaceae: Olea 9, 51, 55.

Type locality: Natal, South Africa, Wood *3*, 1876, on Celastrus.

Citations: 45*, 317, 316.

No. 89. **Irenina gymnosporiae** (Sydow, H. & P.) n. comb.

Meliola gymnosporiae Sydow, H. & P., Annal. Mycol. **10**: 79. 1912.

On Celastraceae: Gymnosporia.

Type locality: Manila, Philippines, Merrill *7422*.

Citations: 294, 4, 354.

Specimen: the type.

No. 90. **Irenina atra** (Doidge) n. comb.

Meliola atra Doidge, Trans. Roy. Soc. So. Africa **8**: 137. 1920.

Irene atra (Doidge) Doidge, So. African Jour. Nat. Hist. **2**: 40. 1920.

On Myrtaceae: Eugenia.

Type locality: Natal, South Africa.

Citation: 51*.

Specimen: Doidge *12436*.

No. 91. **Irenina zeyheri** (Doidge) n. comb.

Irene zeyheri Doidge, Bothalia **1**: 75. 1922.

On Myrtaceae: Eugenia.

Type locality: Natal, South Africa, Doidge *12388*.

Specimens: the type, Doidge *12272*.

No. 92. **Irenina obducens** (Gaillard) n. comb.

Meliola obducens Gaillard, Bull. Soc. Mycol. France **8**: 179. 1892.

On Loganiaceae: Buddleya 83, 163. On Piperaceae: 184.

Type locality: Ecuador, on Buddleya.

Distribution: Ecuador, 163, 84; Brazil 184.

Citation: 84*.

No. 93. **Irenina triloba** (Winter) n. comb.

Meliola triloba Winter, Hedw. **25**: 95. 1886.

Irene triloba (Winter) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.

Irene triloba (Winter) Stevens, Bish. Mus. Bul. **19**: 44. 1925.

On Urticaceae: Pilea 331, 261, Pipturus 264. On Cucurbitaceae: 348, 349, 83.

Type locality: St. Thomas, Africa, on Cucurbitaceae.

Distribution: Porto Rico 331, 261; Hawaii 264; Africa 348, 349, 83.
Citations: 348*, 261*, 215.
Specimen: Heller *558*.

No. 94. **Irenina rinoreae** (Doidge) n. comb.
Irene rinoreae Doidge, Bothalia **1**: 81. 1924.
On Violaceae: Rinorea.
Type locality: Natal, Africa, Doidge *14961*.
Specimen: the type.

No, 95. **Irenina seminata** (Berkeley & Curtis) n. comb.
Meliola seminata Berkeley & Curtis, Cuban Fungi *885*.
Meliola glabra Berkeley & Curtis var. *psychotriae* Stevens, Ill. Biol. Mono. **2**: 14. 1916.
On Rubiaceae: Palicourea 261, 254, Psychotria 261, Coccocypselum 261.
Type locality: Cuba, on Palicourea.
Distribution: Cuba, Porto Rico, 261, Argentine 254.
Citation: 254.

This species was by Gaillard regarded as identical with *I. glabra*. Spegazzini, however, regards these as distinct, while my variety, *psychotriae*, is clearly distinct from *I. glabra*.

No. 96. **Irenina crustacea** (Spegazzini) n. comb.
Meliola crustacea Spegazzini, Bol. Acad. Nac. Cien. Cordoba **11**: no. 255. 1889.
Irene crustacea (Spegazzini) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.
Irene subcrustacea (Spegazzini) Theißen & Sydow, Annal. Mycol. **15**: 461. 1917.
Meliola subcrustacea Spegazzini, Bol. Acad. Nac. Cien. Cordoba **11**: no. 236.
On Magnoliaceae: Drymis 242, 83, 313. On Myrsinaceae: Myrsine 313.
Type locality: Apiahy, Brazil, on Drymis.
Citations: 263*, 312.
Specimens: the type and the type of *M. subcrustacea*.

Theißen (312) regards *Meliola crustacea* Speg. and *Meliola subcrustacea* Speg. as the same though both Gaillard and Spegazzini compared the types of the two and recognized them as two species.

No. 97. **Irenina morototoni** (Spegazzini) n. comb.
Meliola morototoni Spegazzini, An. Mus. Nac. Buenos Aires **32**: 360. 1924.
On Araliaceae: Didymopanax.
Type locality: Argentine.
Specimen: the type.

No. 98. **Irenina vilis** (Sydow, H. & P.), n. comb.
Meliola vilis Sydow, H. & P., Leafl. Philippine Bot. **6**: 1926. 1913.
Irene vilis Sydow, H. & P., Annal. Mycol. **15**: 195. 1917.
On Verbenaceae: Callicarpa.
Type locality: Mindanao, Philippines, *13442*.
Citations: 202, 4, 5.
Specimens: Baker, Fungi Mal. *257*, Phil. Bur. Sc. *26756*.

No. 99. **Irenina pseudanastomosans** (Rehm) n. comb.
Meliola pseudanastomosans Rehm, Hedw. **35**: (150). 1896.
On Leguminosae: Psoralea.
Type locality: Ecuador.
Specimens: The type. Rab., Wint. & Pazsch. Fung. europ. *3847*.
No. 100. **Irenina atricha** n. sp.
Meliola laxa Gaillard var. *atricha* Spegazzini, An. Mus. Nac. Buenos Aires **32**: 355. 1924.
On Myrtaceae: Eugenia.
Type locality: Loreto, Argentine.

Explanation of Figures (Plates I—II).

Fig. 1. *Amazonia anacardiacearum,* mycelium and hyphopodia, from the type.
„ 2. *Amazonia peregrina,* mycelium and hyphopodia, low and high power, from the type.
„ 3. *Meliolina philippinensis,* a structure resembling a hyphopodium, from the type.
„ 4. *Irene sororcula* var. *vernoniae,* mycelium, low and high power, with capitate hyphopodia and mucronate hyphopodia, a setal tip, from the type.
„ 5. *Irene echinus,* mycelium and hyphopodia from Ule *57*.
„ 6. *Irene tonkinensis* var. *cecropiae,* mycelium and perithecium surface, from the type.
„ 7. *Irenopsis portoricensis,* mycelium and hyphopodia, from the type.
„ 8. *Irenopsis coronata* var. *triumfettae,* mycelium and hyphopodia, from the type.
„ 9. *Irenopsis costaricensis,* mycelium and hyphopodia, from the type.
„ 10. *Irenopsis conostegiae,* mycelium and hyphopodia, also a disk, from the type.
„ 11. *Irenopsis tortuosa,* mycelium and hyphopodia, perithecial setae, from No. *235*.
„ 12. *Irenina pinicola,* mycelium and hyphopodia, from the type.
„ 13. *Irenina delechampiae,* mycelium and hyphopodia, from the type.
„ 14. *Irenina calubrinae,* mycelium and hyphopodia, and perithecium surface, from the type.
„ 15 *Irenina shropshiriana,* mycelium and hyphopodia, from the type.
„ 16. *Irenina parasitica,* mycelium and hyphopodia, low and high power, from the type.
„ 17. *Irenina meibomiae,* mycelium and hyphopodia, from the type.
„ 18. *Irenina obscura,* mycelium and hyphopodia, from the type.
„ 19. *Irenina costi,* mycelium and hyphopodia low and high power, from the type.
„ 20. *Irenina isertiae,* mycelium and hyphopodia, low and high power, from No. *1092*.
„ 21. *Irenina nigra,* mycelium and hyphopodia, low and high power, from the type.
„ 22. *Irenina clidemiae,* mycelium and hyphopodia, two spores, from the type.
„ 23. *Irenina glabroides,* mycelium and hyphopodia, low and high power, perithecial surface, from the type.
„ 24. *Irenina anguriae,* mycelium and hyphopodia, from the type.
„ 25. *Irenina combreti,* mycelium and hyphopodia, three spores, from the type.
„ 26. *Irenina longipedicellata,* mycelium and hyphopodia, low and high power, from the type.
„ 27. *Irenina trachylaena,* mycelium and hyphopodia, from No. *184*.

Phalloideen aus Surinam.

(Vorläufige Mitteilung.)

Von Ed. Fischer.

Trotzdem die Phalloideen durch ihre eigentümlichen Formen immer wieder die Aufmerksamkeit der Forschungsreisenden in tropischen Gebieten auf sich gezogen haben, so sind doch wegen der großen Vergänglichkeit dieser Gebilde die Funde vielfach nur glücklichen Zufällen zu verdanken. Eine vollständigere Kenntnis ist nur da zu erwarten, wo Botaniker ständig niedergelassen sind und diesen Pilzen in konsequenter Weise ihre Aufmerksamkeit schenken. Ich war daher ganz besonders dankbar, als sich Herr Professor Dr. G. Stahel in Paramaribo auf meine Bitte hin bereit fand, in Surinam, teils in der Umgebung seines Wohnortes, teils auf seinen Expeditionen ins Innere des Landes, den Phalloideen seine Aufmerksamkeit zu schenken und mir solche in Alkohol konserviert zuzusenden, wobei, was ja besonders wichtig ist, für die meisten auch die Fruchtkörper-Jugendzustände beigebracht werden konnten. Über die Phalloideen jener Gebiete waren wir bisher, außer durch die alte Ventenat'sche Beschreibung der *Dictyophora indusiata*[1]) fast nur durch die von Montagne[2]) bearbeiteten Leprieur'schen Funde aus Cayenne orientiert. Das prächtige Material, welches ich Herrn Prof. Stahel verdanke, enthielt nun neben Arten, die schon von Montagne angegeben werden (hierher gehört insbesondere der merkwürdige *Mutinus xylogenus*) eine Reihe sehr interessanter neuer Formen. Wir lassen hier eine kurze Zusammenstellung dieser Funde folgen, nebst kurzer Beschreibung der neuen Arten, soweit wir solche nicht schon früher gebracht haben. Eine eingehendere, von Abbildungen begleitete Darstellung soll später an anderer Stelle gegeben werden.

[1]) Ventenat. Dissertation sur le genre Phallus. Mém. de l'Institut national des sciences et arts. Sc. math. et phys. T. I pour l'an IV de la Républ. Paris 1798, p. 503—523.

[2]) Montagne, Cam. Cryptogamia guyanensis, seu Plantarum cellularium in Guyana Gallica annis 1835—1849 a cl. Leprieur collectarum enumeratio universalis. Gasteromycetes. Annales des sciences nat. Sér. 4 Botanique, T. III, 1855, p. 136 ff.

1. Clathraceen.

Clathrus columnatus Bosc. mit dreibügeligem und vierbügeligem Receptaculum. Cultuurtuin Paramaribo.

Clathrella Stahelii nov. spec. Patrik-Savanne am Fuße des Brownsberges. — Gesamthöhe des entwickelten Pilzes (in Alkohol) 3—4 cm. Receptaculum hell blutrot oder oben gelb, mit schlanken Gitterästen. Letztere erheben sich zu 4—8 vertikal aus der Volva und bilden am Scheitel nur wenige mehr oder weniger isodiametrische Maschen. An der Basis sind sie zu einem meist ganz kurzen Stiel oder Ring verbunden (vielleicht hie und da auch ganz oder zum Teil unverbunden). Sie haben einen rundlichen Querschnitt und bestehen aus einer einfachen, rundum querrunzeligen Röhre ohne Differenzierung einer Rückenfurche oder glatten Rückenleiste. Dadurch unterscheiden sie sich scharf von denen der *Clathrella Treubii* Bernard, welche auf der Außenseite einige kleinere Kammern aufweisen. Ebenso fehlen die bei *Clathrella chrysomycelina* Möller an den Verbindungsstellen der Gitteräste nach innen vorspringenden dreikantigen Kammern, und dementsprechend zerfällt auch die Gleba nicht wie dort in kleine, an diesen Stellen anhaftende Klümpchen.

Anthurus surinamensis nov. spec. Im Wilhelmina-Gebirge bei ca. 350 m über Meer. — Gesamthöhe des entwickelten Pilzes (in Alkohol) bis ca. 4 cm. Receptaculum fleischrot. Stiel nach oben in 5—7 aufgerichtete oder etwas nach innen zusammenneigende, bis ca. 18 mm lange, schlanke und nach oben allmählich verjüngte Arme geteilt, von denen mitunter 2 oder 3 oben miteinander verbunden sind. Die Arme sind (höchstens mit Ausnahme des untersten Teiles, der mitunter auf der Außenseite ein kurzes Stück weit etwas stielartig ist) rundum querrunzelig, ohne Rückenfurche, einfach röhrig (ob immer?). — *Anthurus australiensis* (Cooke et Mass.), mit dem unsere Form die gelegentlich oben verbundenen Arme gemeinsam hat[1]), unterscheidet sich durch die viel weniger schlanken, mit Rückenfurche versehenen Arme.

2. Phallaceen.

Mutinus xylogenus Montagne. Diese interessante, zuerst von Montagne aus Cayenne beschriebene, winzig kleine Phalloidee wurde von Herrn Prof. Stahel auch in Surinam, besonders auf seiner Expedition nach dem Hendrikstop, gefunden. Wir haben bereits früher[2]) von derselben eine nähere Beschreibung, vor allem auch in bezug auf die Fruchtkörperentwicklung, gebracht.

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[1]) Fischer, Ed. Interessantes Vorkommen einer exotischen Phalloidee in Europa. Mykologische Beiträge 9, in Mitteil. Naturf. Ges. in Bern aus dem Jahre 1916 (Bern 1917), p. 157—160.

[2]) Fischer, Ed. Mykologische Beiträge 23 (Mitteil. Naturf. Ges. in Bern aus dem Jahre 1921 (Bern 1922), p. 293—297) und 27 (ibid. aus d. Jahre 1923 (Bern 1924), p. 39—49).

Staheliomyces cinctus Ed. Fischer[1]). Von diesem merkwürdigen Pilz, der sich von allen übrigen Phallaceen durch die gürtelförmige Lage der Sporenmasse unterhalb der Receptaculumspitze auszeichnet, haben wir in unseren „Mykologischen Beiträgen“[2]) eingehende Beschreibung und Darstellung der Fruchtkörperentwicklung gegeben. Es ist derselbe von Herrn Prof. Stahel in Surinam an zahlreichen Standorten gefunden worden. Außerdem liegt auch eine Beobachtung aus British Guiana vor: in dem 1907 von der New York Zoological Society herausgegebenen Buche „Tropical wild life in British Guiana“ findet sich nämlich eine photographische Wiedergabe desselben unter dem Namen „Jungle Fungus“ vor, aber ohne Beschreibung.

Mutinus (Jansia) granulatus nov. spec. Kleine zierliche Form mit schlankem Receptaculum, im entwickelten Zustande (in Alkohol) 38 mm hoch. Fertile Receptaculumspitze 9 mm lang, nach oben allmählich verjüngt, mit nach innen weit offenen Kammern, sehr kräftig querrunzelig und von einem dicht krümeligen oder gekörnelten, ziemlich leicht ablösbaren pseudoparenchymatischen Überzuge bedeckt. Gesammelt in Mombabasoe am Saramacafluß in Beständen von *Ravenala guyanensis*.

Ithyphallus paucinervis nov. spec. Standort Brownsberg. Kleinere Form, ungefähr von der Größe des *I. tenuis*. Stiel des Receptaculums nach oben allmählich verjüngt, im oberen Teil mit blasig aufgetriebenen, im unteren Teil mit runzelig faltigen Kammern. Hut glatt, mit relativ spärlichen, vorwiegend längsverlaufenden, ziemlich selten queranastomosierenden, sehr zarten und kaum über die Hutfläche vorragenden Leisten besetzt (daher zur Sektion der Reticulati gehörig). Verbindungsstelle von Hut und Stielscheitel mit niedrigem Wulst. Der Hut ist aus mehr oder weniger lockeren, meist sehr dicken Hyphen von ungleichmäßigem Durchmesser aufgebaut, die stellenweise durch perlschnurartiges Anschwellen ein lockeres Pseudoparenchym darstellen können.

Dictyophora indusiata [Vent.] Persoon. Ist auch in der Umgebung von Paramaribo oft anzutreffen, u. a. auf Plantagen, die nach Mitteilung des Herrn Prof. Stahel ungefähr auf dem gleichen Platze liegen, wo Ventenat's Pilz zuerst gefunden wurde. — Als besondere Spezies muß davon abgetrennt werden:

Dictyophora Farlowii Ed. Fischer, die in der Hügelregion (Brownsberg, Voltzberg) auftritt und sich von *D. indusiata* durch ein viel feineres und zarteres Indusium mit viel kleineren Netzmaschen und dünneren Netzbalken unterscheidet, wobei letztere z. T. dünne einschichtige Bänder (statt Röhren) darstellen, die sich in der Richtung der Fläche des Indu-

[1]) In Mitteil. Naturf. Ges. in Bern aus dem Jahre 1920 (Bern 1921), p. XXXV.

[2]) Fischer, Ed. Mykologische Beiträge 18 (Mitteil. Naturf. Ges. in Bern aus dem Jahre 1920 (Bern 1921), p. 137—142), 24 (ibid. aus d. Jahre 1921 (Bern 1922), p. 297—301) und 27 (ibid. aus d. Jahre 1923 (Bern 1924) p. 39—47).

siums ausdehnen, stellenweise so ausgesprochen, daß man letzteres fast als eine einfache zarte Haut mit rundlichen Öffnungen bezeichnen kann. Damit hängt auch das Verhalten des Pilzes in der Natur zusammen, von dem Herr Prof. Stahel schreibt: „Das Netz ist viel feiner, schmutzig weiß und hängt ziemlich schlaff herunter, meist an den Stiel angedrückt. Der Habitus der beiden Arten *[D. Farlowii* und *D. indusiata]* ist in der Natur so verschieden, daß ich auch keinen Moment zweifle, daß es zwei verschiedene Arten sind." Genauere Vergleichung mit dem Exemplar, auf das ich seinerzeit[1]) die *D. Farlowii* (damals als Form von *D. indusiata*) begründet hatte und welches ein noch nicht ausgebreitetes Indusium besitzt, führten mich dazu, die Identifikation der Exemplare aus Surinam mit dieser zu vollziehen.

Bern, den 15. Juli 1927.

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[1]) Untersuchungen zur vergleichenden Entwicklungsgeschichte und Systematik der Phalloideen. Denkschr. der Schweiz. Naturf. Gesellsch., Bd. 32 I, 1890, p. 83.

Über Phragmidium Rubi (Pers.) Wint. var. candicantium Vleugel.

Von P. Dietel.

Von *Phragmidium Rubi* (Pers.) Wint. hat J. Vleugel in der Svensk Bot. Tidskrift 1908, Bd. II, p. 136 eine var. *candicantium* beschrieben, die von der typischen Form durch eine etwas erhöhte Zahl der Teleutosporenzellen (meist 6—7 statt 5—6) und die Beschaffenheit der Uredosporen abweicht. Letztere haben eine derbere Membran mit entfernter stehenden, derberen Stacheln. Vleugel gibt für diesen Pilz eine größere Anzahl von Standorten aus Skandinavien und außerdem aus Deutschland einen Standort bei Koblenz an. Vielleicht ist aber der Pilz im westlichen Deutschland verbreiteter und nur bisher seine Verschiedenheit von dem typischen *Phr. Rubi* nicht beachtet worden. Herr Dr. H. Poeverlein sammelte ihn im Jahre 1923 an drei verschiedenen Standorten in Baden, nämlich oberhalb Leimen im Bezirk Heidelberg und bei Rauenberg und Dielheim im Bezirk Wiesloch. Die Nährpflanzen sind in keinem dieser Fälle näher bestimmt, gehören aber, nach der Beschaffenheit der Blätter zu urteilen, zu mindestens zwei verschiedenen *Rubus*-Arten, von denen die eine (Dielheim) anscheinend nicht der Gruppe der *Candicantes* angehört. Auf dieses Material stützen sich die folgenden Angaben.

Es sei im voraus bemerkt, daß wir die von Vleugel angegebenen Unterschiede zwischen den beiden Formen auch an den deutschen Materialien durchaus bestätigt fanden. Insbesondere war es möglich, durch die in allen dreien vorhandenen Uredosporen die var. *candicantium* von der typischen Form sicher zu unterscheiden. Nun ist es aber immer bedenklich gewesen, unter den Uredineen morphologisch unterscheidbare Formen als bloße Varietäten zu einer Art zu ziehen. Wir halten es daher auch hier für richtiger, die von Vleugel scharf erkannte Form als eine eigene Art zu betrachten, die als solche den Namen *Phragmidium candicantium* (Vleugel) zu führen hat. Wir folgen darin nur einer Ansicht, die vermutungsweise schon H. und P. Sydow in der Monographia Uredinearum III, p. 144 ausgesprochen haben.

Da die Zahl der Zellen in den Teleutosporen auch bei dem typischen *Phr. Rubi* nicht allzu selten, in manchen Präparaten sogar bei einem nicht unbeträchtlichen Teil der Sporen, bis auf sieben steigt, schien es mir wünschenswert, einmal die Variabilität der Teleutosporen dieser beiden Arten etwas näher ins Auge zu fassen.

Die Variationen der Sporen treten bei *Phr. Rubi* und *Phr. candicantium* meist nicht vereinzelt auf, d. h. nicht derart, daß eine bestimmte Bildungsabweichung nur einzeln in verschiedenen Sporenlagern vorkommt, vielmehr sind die Abweichungen innerhalb eines Lagers häufig an mehreren, bisweilen vielen Sporen anzutreffen, während sie in anderen Lagern desselben Materials völlig fehlen. Beispielsweise wurden in einem Teleutolager von *Phr. candicantium* viele Sporen gefunden, deren Endzelle nicht halbkugelig gestaltet war, wie es normalerweise der Fall ist, sondern dreieckig und bis zur doppelten Höhe normaler Endzellen verlängert, eine Bildung, die in dieser auffälligen Form nicht wieder beobachtet wurde. — Von sonstigen Bildungsabweichungen sei nur noch die folgende erwähnt. In einem Sporenlager von *Phr. candicantium* hatte die Mehrzahl der Sporen im Gegensatz zu den normalen eine glatte Membran oder es waren nur die obersten 1 bis 2 Zellen schwach warzig. Gleichzeitig waren diese Sporen schmäler und die einzelnen Sporenzellen erheblich höher, so daß die Breite die Höhe nur wenig übertraf. Dadurch ergab sich eine auffällige Schlankheit dieser Sporen. Während 6zellige Sporen dieser Art normalerweise meist 75—85, im Durchschnitt 82,4 μ lang sind, ergab sich als Durchschnitt aus den Messungen von sieben solcher Sporen eine Länge von 108,4 μ bei Schwankungen zwischen 98 und 120 μ. Das ist eine Länge, die sonst nicht einmal vom Durchschnitt 7-zelliger Sporen (98,1) erreicht wird. Solche schlanke Sporen wurden spärlicher auch an anderem Material beobachtet, aber nie mit glatter Membran.

Nachdem durch diese Beobachtungen festgestellt war, daß Schwankungen in der Ausbildung der Sporen meist gesellig vorkommen, wurden die Beobachtungen über die Variation der Zellenzahl in den Teleutosporen in der Weise vorgenommen, daß die Sporen eines Präparates immer nur einem einzigen Sporenlager entnommen wurden. Zugleich wurden auch Messungen angestellt in der Weise, daß von je zehn 5-, 6- und resp. 7zelligen Sporen eines Präparates die Länge gemessen wurde. Die Messungen an je 150 Sporen ergaben als Durchschnitt für eine 6zellige Spore bei *Phr. Rubi* 82,3 μ, bei *Phr. candicantium* 82,4 μ, also völlige Übereinstimmung. Wir können daher von einer Wiedergabe der erhaltenen Zahlen auch für die übrigen Sporen absehen, da auch sie nichts zur besonderen Charakterisierung der beiden Arten beitragen. Wir beschränken uns vielmehr darauf, nur das ungefähre Mengenverhältnis der überwiegenden Zellenzahlen anzugeben, wobei die Sporen mit 4 oder weniger Zellen als in starker Minderheit befindlich meist unerwähnt bleiben. Gewonnen wurden diese Angaben an Präparaten, die meist aus 150 bis 250 Sporen bestanden.

Von *Phr. Rubi* stammte das Material von zwei Standorten aus Thüringen: Roda und Greiz, ferner von Berneck im Fichtelgebirge, Mosbach in Baden und Speyer.

Phragmidium candicantium.

Rauenberg.	In 3	Präparaten	6- und 7zellige gleich häufig, 5zellige spärlich.
	„ 1	„	6zellige stark überwiegend, 5- und 7zellige je kaum halb soviel.
Dielheim.	„ 1	„	6- und 7zellige gleich häufig, 5zellige sehr zurücktretend.
	„ 3	„	6zellige überwiegend, 7- und 5zellige spärlicher.
Leimen.	„ 3	„	6- und 7zellige gleich häufig, 8zellige spärlicher, 5zellige vereinzelt.
	„ 1	„	7zellig stark überwiegend.
	„ 1	„	7- und 8zellige gleich häufig, 9zellige ganz vereinzelt, 6zellige ziemlich spärlich.

Phragmidium Rubi.

Roda.	In 3	Präparaten	5zellige stark überwiegend.
	„ 3	„	5- und 6zellige gleich häufig.
	„ 1	„	6zellige überwiegend.
	„ 1	„	3-, 4-, 5- und 6zellige gleich häufig.
Greiz.	„ 3	„	6zellige überwiegend.
	„ 1	„	5- und 6zellige gleich zahlreich.
Berneck.	„ 3	„	5zellige überwiegend.
Mosbach.	„ 4	„	6zellige überwiegend, 7zellige nicht selten.
Speyer.	„ 1	„	5zellige die 6zelligen stark überwiegend.
	„ 2	„	5- und 6zellige gleich häufig, 7zellige nicht selten.
	„ 2	„	6zellige die 5zelligen überwiegend, 7zellige ziemlich zahlreich.

Es ergibt sich aus dieser Tabelle, daß in verschiedenen Sporenlagern eines und desselben Materials eine verschiedene Zahl von Sporenzellen überwiegen kann, daß also die Schwankungen dieses Merkmals dasselbe Verhalten aufweisen, wie es sich oben für andere Variationen ergeben hatte. Es ist ferner aus ihr ersichtlich, daß die Unterscheidung beider Pilze nach den Teleutosporen allein nicht gut möglich ist, wie das in ähnlicher Weise für die beiden Rosenphragmidien *Phr. tuberculatum* und *Phr. disciflorum* der Fall ist.